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The NATO-Warsaw Pact competition in the 1970s and 1980s: a revolution in military affairs in the making or the end of a strategic age?

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The NATO-Warsaw Pact military competition at the heart of the Cold War was also the incubator of a 'Revolution in Military Affairs' (RMA) in Europe in the 1970s and 1980s, which predates the better-known American concept of RMA of the 1990s.

Recent scholarship on NATO and the Warsaw Pact has gone a long way in unearthing and documenting the increasingly *interactive* nature of that competition and in explaining the central role that the notion of an RMA plays in helping identify salient aspects of opposing NATO and Warsaw Pact operational concepts and force developments during the last two decades of the Cold War.[1] This authoritative

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[1] Dima Adamsky, 'The Conceptual Battles of the Central Front: The Air-Land Battle and the Soviet Military Technical Revolution', in *The Crisis of Détente in Europe: From Helsinki to Gorbachev, 1975–1985*, ed. Leopoldo Nuti (London: Routledge, 2009), 150–162; Dima Adamsky, 'Through the Looking Glass: The Soviet Military-Technical Revolution and the American Revolution in Military Affairs', *The Journal of Strategic Studies* 31, no. 2 (April 2008): 257–294; Dima Adamsky, *The Culture of Military Innovation: The Impact of Cultural Factors on the Revolution in Military Affairs in Russia, the US, and Israel* (Stanford, CA: Stanford University Press, 2010); Gordon S. Barrass, *The Great Cold War: A Journey through the Hall of Mirrors* (Stanford, CA: Stanford University Press, 2009); Gordon S. Barrass, 'The Renaissance in American Strategy and the Ending of the Great Cold War', *Military Review*, January–February 2010: 101–110; Beatrice Heuser, 'Warsaw Pact Military Doctrines in the 1970s and 1980s: Findings in the East German Archives', *Comparative Strategy* 13, no. 4 (1993): 437–457; Beatrice Heuser, 'Victory in a Nuclear War:

scholarship has also drawn attention to the transformational[2] influence that the Soviet concept of a 'Military-Technical Revolution' (MTR) had on American thinking in the late 1980s and early 1990s regarding the relationship between technology, operational concepts and organisational structures. In many ways, the broader American notion of RMA can be seen as the stepchild of the Soviet MTR, with the lineage between the two having been established through the technological but particularly conceptual dynamism of the Cold War NATO-Warsaw Pact competition.

An unintended by-product of this intellectual linkage between the Soviet MTR and the emerging American RMA that was revealed during the 1991 *Desert Storm* campaign has been the displacement, in Cold War historiography, of the transformational centre of gravity of the NATO-Warsaw Pact interactive competition from the mid-1970s towards the mid-1980s. In this American RMA-centred construct, the apex of industrial-age warfare on the cusp of the information age that was reached in the European theatre in the 1980s foreshadowed the wider transformations that were to follow in the next decade. This conceptual and temporal tilt towards the 1980s, however, masks the fact that the real RMA pivot in the NATO-Warsaw Pact competition happened a decade earlier. Moreover, the focus on the 1980s neglects this RMA's fundamental Cold War and European specificity.

Therefore, embedding the Cold War RMA in Europe into the wider post-Cold War RMA narrative carries with it the risk that RMA historiography could distort Cold War historiography. This risk can be illustrated by highlighting contrasting perspectives on four aspects of the relationship between the RMA narrative and the NATO-Warsaw Pact competition of the 1970s and 1980s:

Footnote 1 continued

A Comparison of NATO and WTO War Aims and Strategies', *Comparative European History* 7 (1998): 311–327; Vojtech Mastny, *Learning from the Enemy: NATO as a Model for the Warsaw Pact* (Zurich: Forschungsstelle fur Sicherheitspolitik und Konfliktanalyse der ETH, 2001); Vojtech Mastny, Sven G. Holtsmark and Andreas Wenger, *War Plans and Alliances in the Cold War* (London: Routledge, 2006); R. Craig Nation, 'Programming Armageddon: Warsaw Pact War Planning, 1969–1985', in Nuti, *Crisis of Détente in Europe*, 124–136; and Diego A. Ruiz Palmer, 'Paradigms lost: A Retrospective Assessment of the NATO-Warsaw Pact Military Competition in the Alliance's Southern Region', *Comparative Strategy* 9, no. 3 (1990): 265–286.

[2] Soviet military theorists began in the 1970s to describe contemporary changes in the conduct of warfare as a 'Military-Technical Revolution (MTR)' and the third such MTR in the twentieth century, after the 'mechanisation MTR' which followed World War I and the 'nuclear MTR' that followed World War II. Paradoxically, while these theorists assigned technology a leading role in driving revolutionary change – hence, the terminology MTR – conceptual innovation and organisational adaptation accompanied and often anticipated weapons developments in Soviet conventional force developments in Europe of the 1970s and 1980s, This was also the case for NATO, as addressed in this article. Accordingly, because the American term RMA has been widely accepted as more satisfactory than the term MTR to describe the full content of the concept of military revolutions, and its wider scope encompasses the MTR, RMA is used throughout this article as the preferred term. See, Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1994); MacGregor Knox and Williamson Murray, *The Dynamics of Military Revolutions* (Cambridge: Cambridge University Press, 2001); and Adamsky, *The Culture of Military Innovation.*

(i) The salience of the statements made in the early 1980s by Marshal Nikolai Ogarkov, chief of the Soviet armed forces General Staff between 1977 and 1984, and other Soviet military and academic theoreticians on the emergence of an MTR is generally attributed to their prospective and prophetic nature.[3] As such, these statements are seen as having helped lay down the conceptual background for the broader notion of RMA that was formulated in the United States nearly a decade later.

In fact, by the time these Soviet statements were made, the conceptual and organisational dimensions of a Cold War RMA in the European theatre were largely in place, in both the Warsaw Pact and NATO, and its technological applications were well under way.

(ii) The MTR described by Soviet writers in the early 1980s is often characterised as a bold conceptualisation of the implications for warfare and politics of Western, predominantly American, development of so-called 'emerging technologies' oriented primarily to battlefield surveillance and follow-on force targeting and conventional attack.

In reality, the Soviets had been integrating into their operational art and their force posture opposite NATO, since the mid-1970s, many of the operational and technological components of the MTR, which Ogarkov and others were conceptualising, notably in support of the execution of 'deep operations.'[4]

(iii) The maturation of the conceptual and organisational dimensions of a successful RMA in the 1980s has been described as lagging behind the progress of its technological underpinnings.

In fact, the reverse was, more often than not, the case. In both alliances, conceptual innovation and organisational transformation in the 1970s often ran ahead and anticipated the fielding of new generations of military equipment.[5] Starting about 1976–1977, Polish exercise planners were directed to script into their exercises capabilities that were expected to become available within the next five years, in order to test new concepts ahead of time.[6]

(iv) The United States has been faulted for neglecting the operational level of war, as well as operational art, during most of the Cold War, at least until the adoption

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[3] For a review of Ogarkov's writings, see Mary C. FitzGerald, *Marshal Ogarkov On Modern War: 1977– 1985* (Alexandria, VA: Center for Naval Analyses, November 1986).

[4] On the historical roots of the Soviet concept of 'deep operations', see David M. Glantz, 'The Nature of Soviet Operational Art', *Parameters* 25, no. 1 (Spring 1985): 4–6; and David M. Glantz, *Soviet Military Operational Art: In Pursuit of Deep Battle* (London: Frank Cass, 1991).

[5] The extent to which conceptual innovation in the United States Army, following the end of the Vietnam War, anticipated, rather than followed, technological development, is highlighted compellingly in Richard Lock-Pullan, 'How to Rethink War: Conceptual Innovation and AirLand Battle Doctrine', *The Journal of Strategic Studies* 28, no. 4 (August 2005): 679–702.

[6] *Relationship of Military Exercises to War Plans – 'Wiosna-69' Exercise*, 30 July 1982, classified Secret (Langley, VA: Central Intelligence Agency) CIA Freedom of Information Act (FOIA) Electronic Library, declassified and publicly released on 18 June 2012, 4.

in 1982 of the US Army's 'AirLand Battle' doctrine, in the form of an update of the FM-100-5 field manual.

> In reality, the operational level of war, as well as operational art, were alive in NATO throughout most of the Cold War, with the notable exception of the period between the mid-1960s and the mid-1970s.[7]

Together, these four examples of differing perceptions illustrate how association with the broader RMA narrative of the early 1990s can cloud awareness or distort perception of the deeply transformational aspects of the NATO-Warsaw Pact competition in the second half of the 1970s.

The Cold War RMA that emerged in the Warsaw Pact and NATO in the mid-1970s stood at the juncture of an advanced form of manoeuvre warfare and what became known in the 1990s as 'network-centric warfare' – a combination of mass, fires and computers.[8] This RMA was so highly evolved for its time and structured, conceptually, on such an unprecedented operational scale that its *sui-generis* nature inescapably would create the very conditions of its demise, once the strategic circumstances that had motivated its rise had vanished with the end of the Cold War. During its last two decades, the Cold War was truly the 'Great War' of its time, all-pervading strategically and operationally, until the fall of the Berlin Wall in November 1989, and irrelevant a year later, following Germany's reunification in October 1990.[9]

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[7] For an exposition of NATO operational art in the late 1950s and early 1960s, based on AFCENT-level command post exercises in the *Lion* series, see General Hans Speidel, 'Mission and Needs of NATO's Shield', *Army*, September 1960: 33–38. The decline in NATO's practice of operational art in the Central Region of Allied Command Europe (the Federal Republic of Germany, France, Belgium, Luxembourg and the Netherlands) in the mid-1960s was the consequence, in part, of the gradual engagement of the French, United States and British armies in non-traditional operations in Algeria, Vietnam and Northern Ireland, and the associated withdrawals of French forces from West Germany from the mid-1950s onwards, as well as of American and British forces in 1967–1968. It also resulted from the disbandment in 1967 of several operational-level commands, notably the headquarters of NATO's Allied Land Forces, Central Europe (LANDCENT) in Fontainebleau, France, and of the 7th United States Army in Stuttgart, Germany, following France's withdrawal from NATO's integrated military structure in 1966, in a drive to meet heightened headquarters and manpower reduction concerns. 'Reorganization of AFCENT', NATO Military Committee document MC 5/21 (Draft), 7 August 1967, Section II, Enclosure 1, classified NATO Secret (Brussels, Belgium: NATO International Staff Central Archives (NISCA)), declassified and disclosed on 1 August 2002, 12–13.

[8] On the contribution of mass to Soviet operations, see Major John G. Hines, 'The Principle of Mass in Soviet Tactics Today', *Review of the Soviet Ground Forces*, DDB-1100-307-81 (Washington, D.C.: Defense Intelligence Agency), June 1981, 1–8. The increased availability in the 1970s of automated data processing means to support the development of operational and logistical plans and of more sophisticated communications links to transmit orders gradually made the planning and conduct of complex, theatre-scale operations easier to execute, planting the seeds for the more ambitious vision of 'network-centric warfare' two decades later.

[9] The notion of the 'Great Cold War' was introduced by Barrass in his landmark book, *The Great Cold War*. To date, Barrass's book is the most authoritative strategic assessment of the Cold War and of the NATO-Warsaw Pact competition.

This questionable transferability of the RMA of the late 1970s and early 1980s in Europe to a later period, and to theatres other than Europe, helps explain the inadequacy of the Soviet Army performance in Afghanistan, as well as the operational void that the Russian armed forces, as well as the United States and other NATO armed forces, encountered, each in their own way, after the end of the Cold War, and which made them often ill-prepared for the asymmetric security challenges of a new strategic era.[10] Against this background, this article addresses how and why the Cold War RMA of the late 1970s and early 1980s was, at once, so significant in its own right during its time and became so irrelevant to the strategic age that followed it.

Cold War and post-Cold War revolutions in military affairs

The concept of Revolutions in Military Affairs, in its fullest meaning, was set out in the landmark memorandum prepared by the US Department of Defense's Office of Net Assessment (ONA) in 1992.[11] In its wake, it has become widely accepted that a genuine RMA should include four interdependent components: (i) technological change; (ii) military systems evolution, as an application of the latter; (iii) operational innovation; and (iv) organisational adaptation, the latter two being the enabling components for battlefield impact and success. Dima Adamsky has included the 'vision of future war' as the RMA's necessary propelling force.[12]

The writings of Ogarkov and his Soviet contemporaries are often looked upon as the intellectual springboard to the American RMA of the 1990s.[13] By the mid-1970s, the Soviet military, steeped in the operational lessons from the 'Great Patriotic War', notably in relation to the theory of deep operations,[14] had a rapidly-gathering and broader conceptual understanding of the evolving nature of warfare than their contemporary Western counterparts. Under an increasingly ambitious and militant Soviet military leadership, the Warsaw Pact was running ahead of NATO in integrating

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[10] It is worth noting that General Makhmut Gareev has cautioned that 'in focusing military development only on conflicts and local wars, the point of maintaining a modern military is lost. [. . .] Unless we work on and improve large-scale military operations, our officer corps and all the training of the Army and Navy begin their decline.' Quoted in General M.A. Gareev, 'Applying Zhukov's Command Heritage to Military Training and Reform in Today's World', *The Journal of Slavic Military Studies* 12, no. 4 (December 1999): 100. For 15 years, between 1974 and 1989, General Gareev exercised high-level responsibilities for the operational training and readiness of the Soviet armed forces, rising to the position of a deputy chief of the General Staff. He has been one of Russia's most authoritative and prolific military writers on matters of strategy, doctrine and tactics for nearly half a century and is currently, at the age of 91, the president of the Russian Academy of Military Sciences.

[11] Andrew F. Krepinevich, Jr., 'Cavalry to Computer', *The National Interest* 37 (Autumn 1994): 30–42, and Andrew F. Krepinevich, Jr., *The Military-Technical Revolution: A Preliminary Assessment* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2002).

[12] Dima Adamsky, *American Strategic Culture and the US Revolution in Military Affairs*, Defence and Security Studies (Oslo: Norwegian Institute for Defence Studies, 1/2008), 6.

[13] Adamsky, 'Through the Looking Glass', 262–276.

[14] Richard Simpkin, *Deep Battle: The Brainchild of Marshal Tukhachevskii* (London: Brassey's, 1987).

new force employment concepts, innovative organisational schemes and new generations of weapons systems into an all-encompassing paradigm for the conduct of a strategic operation in a Theatre of Military Operations (*teatr voyennykh deystviy* or TVD).[15] Exercise *Zapad* 77 in May–June 1977 can rightly be seen as a bold application of the rapidly emerging Soviet RMA to the execution of a 'Theatre-Strategic Operation' (TSO) under the direction of an experimental TVD high command.[16]

Operational and organisational innovation, however, was by no means restricted to the Warsaw Pact. The scope and depth of NATO conceptual and force development processes, although lagging behind those of the Warsaw Pact, had become apparent operationally by 1977, in the form of a joint, land/air campaign at the operational level as the preferred approach to the execution of allied operations in wartime. Such an approach underpinned increasingly the planning of NATO's highly visible *Autumn Forge* exercises, conducted from 1975 onwards every autumn until the end of the Cold War. This new approach reached its full fruition, technologically, with the gradual fielding of a new generation of 'smart' weapons systems, munitions and sensors, a decade later, such as the Multiple Launch Rocket System (MLRS), the *Copperhead*, Search and Destroy Armour (SADARM), *Paveway* and *Durandal* munitions, and the TR-1 reconnaissance aircraft.[17]

The full maturation of NATO's Cold War RMA was reflected in the unprecedented scope of exercises REFORGER 87 and 88 and their field training exercise phase – in northern and southern West Germany, respectively – as well as the maritime exercises *Ocean Safari* 85 and 87 and *Teamwork* 88 in the Norwegian Sea.[18] However, the conceptual and organisational seeds of this NATO RMA, geared to match the

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[15] John G. Hines and Philip A. Petersen, 'The Warsaw Pact Strategic Offensive: The OMG in Context', *International Defense Review*, October 1983: 1391–1395; William E. Odom, 'Soviet Force Posture: Dilemmas and Directions', *Problems of Communism*, January–February 1985: 7; Mary C. FitzGerald, 'Marshal Ogarkov on the Modern Theater Operation', *Conflict Quarterly*, Summer 1986: 50–58; Adamsky, 'Through the Looking Glass', 270.

[16] *Materials of the critique of the operational-strategic command-staff exercise Zapad-77*, TS #788301, 13 October 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012; and Vojtech Mastny and Malcolm Byrne, *A Cardboard Castle? An Inside Story of the Warsaw Pact, 1955–1991* (Budapest and New York: Central European University Press, 2005), 406–407.

[17] For a comprehensive review of the state of 'emerging technologies' for 'deep attack' in the mid-1980s, see *Technologies for NATO's Follow-On Forces Attack Concept* (Washington, D.C.: Office of Technology Assessment, July 1986).

[18] These NATO maritime exercises simulated multi-carrier operations conducted against the Soviet Union from inside Norwegian fjords. Eric Grove, *Battle for the Fjords: NATO's Forward Maritime Strategy in Action* (Annapolis, MD: Naval Academy Press, 1991). The US-led maritime exercise *Ocean Venture* 81 in September–October 1981 was the first in a series to reassert an allied naval presence in the Norwegian Sea, north of the so-called Greenland-Iceland-United Kingdom (GIUK) gap. *Ocean Venture* 81 also contained a dedicated psychological operations (PSYOPS) dimension that contributed to the 1983 Soviet 'war scare.' See Nigel West, *The Third Secret* (London: Harper Collins, 2000), 218–222; and Benjamin Fischer, 'The Soviet-American War Scare of the 1980s', *International Journal of Intelligence and Counterintelligence*, no. 19 (2006): 480–518.

Soviet RMA, had been planted a decade earlier, often well ahead of the fielding of the technologies upon which the hopes for NATO's ultimate operational success in a conflict with the Warsaw Pact had been pinned.

The Office of Net Assessment was cognisant, as early as the late 1970s, of this confluence of RMA developments in both alliances. They heightened a new awareness that the balance of forces in Central Europe had become more dynamic and complex, more challenging to measure confidently and potentially more unstable and unpredictable. These findings were reflected in successive assessments of the NATO-Warsaw Pact balance of forces carried out by ONA under the auspices of National Security Study Memorandum 186[19], starting with a first assessment completed in March 1978.[20] By the early 1980s, ONA assessments had integrated the latest, most innovative developments in Warsaw Pact and NATO planning for a war in Europe.[21] Not surprisingly, this ever-deeper understanding of the interactive relationships between conceptual and technological developments in the two alliances during the last decade-and-a-half of the Cold War provided the indispensable intellectual background and impetus to ONA's path-breaking work in the late 1980s on the concept of RMAs. Intellectually, therefore, the American RMA of the 1990s had a direct affiliation relationship with the European theatre's Cold War RMA of the late 1970s and early 1980s.

The reach and depth of this Cold War European RMA were so all-encompassing on both sides of the NATO-Warsaw Pact competition, however, that they raise several questions regarding the standing and lasting pertinence of conclusions associated with the American RMA of the 1990s: (i) Was Soviet MTR conceptual thinking in the 1970s and 1980s, by its very nature, inherently superior to NATO's allegedly poor conceptual

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[19] For an authoritative analysis of the origins of the net assessment function in the United States Department of Defense, see Phillip A. Karber, *Net Assessment for SecDef* (Vienna, VA: The Potomac Foundation, 2013). For a comprehensive review of its application, see George E. Pickett, James G. Roche and Barry D. Watts, 'Net Assessment: A Historical Review', in Andrew W. Marshall, J.J. Martin and Henry S. Rowen, eds., *On Not Confusing Ourselves: Essays on National Security Strategy in Honor of Albert and Roberta Wohlstetter* (Boulder, CO: Westview Press, 1991).

[20] To date, only a single ONA classified assessment of the NATO-Warsaw Pact balance of forces has been declassified and released to the public. Lieutenant Colonel Peter R. Bankson, *The Military Balance in Europe: A Net Assessment*, Office of the Director of Net Assessment, 1 March 1978 (Washington, D.C.: Department of Defense), declassified and released to the public on 31 December 1988.

[21] National Security Study Memorandum 186, *National Net Assessment of Comparative Costs and Capabilities of US – USSR Military Establishments* (Washington, D.C.: The White House, 1 September 1973.) For over a decade and a half, starting in the mid-1970s, NSSM-186 was the analytical framework for the conduct, under the authority of Andrew W. Marshall, director of Net Assessment in the US Department of Defense, of successive, increasingly ambitious and complex assessments and simulations of the NATO-Warsaw Pact balance of forces and competing operational strategies. A task force of analysts was assembled to conduct the NSSM-186 assessments under the direction of Phillip Karber, who exercised that responsibility with a steady hand for nearly fifteen years. By the end of the Cold War, NSSM-186 had been the most ambitious and longest-running analytical effort ever undertaken by the Department of Defense. See Stephen Peter Rosen, 'The Impact of the Office of Net Assessment on the American Military in the Matter of the Revolution in Military Affairs', *The Journal of Strategic Studies* 33, no. 4 (2010): 477–480.

record? This postulate reflects what may be an unwarranted glorification of Soviet military thinking. (ii) Can the RMA concept be depended upon reliably to guide transformation of the armed forces with a view to the planning and conduct of future operations outside the context of a competitive and interactive relationship with a relatively symmetric, determined and methodical peer competitor? (iii) By implication, is the RMA concept transferable from the European theatre, where its deeper roots lie, to extra-European theatres, where adversaries might employ forms of warfare that are not easily susceptible to RMA-inspired interpretation and disruption?

New RMAs will occur and they will probably be as unpredictable in regard to their consequences as their predecessors. Assessment of the Cold War RMA offers a guide to how far their conceptual, organisational and technological scope can reach, yet how quickly their relevance can vanish in a new strategic era.

The 1961 Berlin Crisis and the NATO-Warsaw Pact military competition

Throughout the Cold War, the military postures and operational strategies of NATO and the Warsaw Pact reflected shifting preferences and constraints between and within the two alliances, influenced by enduring geographical, historical, political and economic factors, as much as by evolving perceptions and assessments of the likely opponent's capabilities and vulnerabilities. Following the 1961 Berlin Crisis, the competition between the two alliances reflected an increasing degree of interaction that reached its apex in the mid-1980s. This ever-growing interaction was triggered by the respective strategic and operational lessons that the two alliances derived from the Berlin Crisis, which can rightly be considered as the foundational event of the NATO-Warsaw Pact military competition of the Cold War's last two decades.

For the Warsaw Pact, American firmness, awareness of *Live Oak* and NATO planning for protecting Western access rights to Berlin[22] – including large-scale allied land and air operations into the German Democratic Republic (GDR), as well as a nuclear option[23] – and the unsuitability of the Soviet Union's then prevailing military strategy for managing European contingencies, other than through prompt escalation to a strategic nuclear exchange with the United States, had combined to prevent the

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[22] Circumstantial evidence, based on testimony and investigation, suggests that early *Live Oak* and SHAPE Berlin Contingency (BERCON) plans were compromised by Georges Pâques, a French civil servant working as a Soviet agent in the press service at NATO Headquarters, located at the time in Paris, before his arrest in August 1963. *Possible Compromise of LIVE OAK Plans*, Memorandum from Commander, Live Oak, General Lyman Lemnitzer, to the Washington Ambassadorial Group, classified Live Oak Secret, 20 February 1964, Live Oak file no. 58 (Freiburg: BundesArchiv-MilitärArchiv), declassified and disclosed to the public on 4 October 2005 and Pierre Assouline, *Une question d'orgueil* (Paris: Gallimard, 2012), 224.

[23] *Berlin Contingency Planning*, SGPO 29/62, 30 March 1962, classified Cosmic Top Secret (Brussels, Belgium: NISCA) declassified and disclosed to the public on 29 March 2010. For a comprehensive and authoritative assessment of the *Live Oak* organisation, see Gregory W. Pedlow, 'Three Hats for Berlin: Lauris Norstad and the Second Berlin Crisis, 1958–1962', in *The Berlin Wall Crisis: Perspectives on Cold War Alliances*, eds. John S. Gearson and Kori Schake (London: Palgrave Macmillan, 2002), 175–198.

USSR from imposing its will in Berlin. The unfavourable outcome of the Berlin Crisis for Moscow had exposed the inadequacy of the Soviet military position in Central Europe and highlighted the requirement to alter the 'correlation of forces' in the Warsaw Pact's favour, through a strategy of countervailing military power.[24] The increasing autonomy of the European theatre in relation to the central strategic competition with the United States sprang from these strategic considerations.[25]

The Berlin Crisis also exposed the desirability of embedding the Soviet Union's management of its East European empire into a collective Warsaw Pact structure that, the Soviets hoped, would be more useful politically, and more usable militarily, in crisis situations.[26] This evolution of the Warsaw Pact was reflected, starting in 1961, in the conduct of multilateral command post and field training exercises,[27] and in the adoption in 1969 of the pact's peacetime statutes.[28] Over the three decades between the 1961 Berlin crisis and the end of the Cold War, the importance of East European forces in the USSR's military strategy for a war with NATO in Europe grew steadily, despite gaps in capability and shifting concerns over reliability.[29]

At the same time, the prospect of large-scale NATO nuclear use associated with the deployment of a growing number of nuclear weapons with US and other allied forces, as well as an ever-greater awareness of the devastating consequences of any employment of nuclear weapons in Europe, prompted a growing scepticism regarding the attractiveness of nuclear use.[30] These considerations fed an increased Soviet preference for a conventional-only option.[31] It has been common knowledge for

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[24] Soviet premier Nikita Khrushchev had pressed the Soviet military to be ready to confront NATO conventionally over Berlin. See Aleksandr Fursenko and Timothy Naftali, *Khrushchev's Cold War* (New York and London: W.W. Norton, 2006), 358–359 and 370. According to Soviet Colonel Oleg Penkovsky, who was a clandestine source of the Central Intelligence Agency, the Soviet armed forces were unprepared for a war with NATO over Berlin. Jeffrey W. Legro, 'Soviet Crisis Decision-making and the Gorbachev Reforms', *Survival*, 31, no. 4 (July–August 1989): 346, and *CIA Analysis of the Warsaw Pact Forces: The Importance of Clandestine Reporting* (Langley, VA: Central Intelligence Agency) 28 May 2013, 14.

[25] Mastny and Byrne, *Cardboard Castle*, 21.

[26] *Warsaw Pact Military Strategy: A Compromise in Soviet Strategic Thinking*, RSS No. 0007/65, 7 June 1965, classified Secret (Langley, VA: Central Intelligence Agency), CIA FOIA Electronic Library, declassified and released to the public in June 2007; and Mastny and Byrne, *Cardboard Castle*, 15.

[27] Mastny and Byrne, *Cardboard Castle*, 19; and Matthias Uhl, 'Storming on to Paris: the 1961 Buria Exercise and the Planned Solution of the Berlin crisis', in Mastny, Holtsmark and Wenger, *War Plans and Alliances*, 46–71.

[28] Mastny and Byrne, *Cardboard Castle*, 31 and 38–39.

[29] *CIA Analysis of the Warsaw Pact Forces: The Importance of Clandestine Reporting*, 33.

[30] Soviet operational research study – *Assessment of Irretrievable Losses in the Western Theatre of War in Case of Operations with Nuclear Weapons* – published in 1969, cited by Vitalii Tsygischko, in Jan Hofenaar and Christopher Findlay, *Military Planning for European Theatre Conflict during the Cold War*, An Oral History Roundtable, Stockholm, 24–25 April 2006, study no. 79 (Zurich, Switzerland, ETH, 2007), 65. From the mid-1960s onwards, Dr Tsygischko was a leading operations research analyst working for the Soviet General Staff in Moscow on the planning and conduct of a strategic operation in a theatre of military operations.

[31] James M. McConnell, *The Soviet Shift in Emphasis from Nuclear to Conventional*, CRC-490 – vols. I and II (Alexandria, VA: Center for Naval Analyses, June 1983).

several decades that Soviet field training exercises *Dnepr* and *Dvina* in 1967 and 1970 respectively included an initial, non-nuclear phase.[32] A classified document recently declassified and released to the public indicates an even earlier rehearsal of an extended conventional phase during the *Narew* manoeuvres, a Polish *Front*-level exercise conducted in 1965.[33] Other Warsaw Pact exercises in the 1970s continued that pattern.[34] Evidence from post-Cold War interviews with Soviet commanders and defence scientists, such as Gareev, reveals a well-rehearsed preparedness to fight in a nuclear battlefield, as well as a consistent policy position that the USSR would have employed nuclear weapons only in response to (anticipated) NATO nuclear use.[35]

For NATO, the Berlin Crisis also involved a fundamental reassessment, foremost by the Kennedy administration, prompted by a new awareness of growing disconnects in the Alliance's defence posture:

(a) A widening geographic and operational gap between relatively static allied force deployments anchored predominantly on the Rhine and Main Rivers, a commitment to protect allied access rights to Berlin halfway across the territories Federal Republic of Germany (FRG) and the GDR, and a higher command structure concentrated around Paris;[36]

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[32] Thomas W. Wolfe, *Soviet Power and Europe, 1945–1970* (Baltimore and London: The Johns Hopkins Press, 1970), 456 and 472–473.

[33] *Polish Defense Ministry Document Concerning Experiences and Conclusions from the 'Narew' Maneuvers*, 20 January 1967, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Library, declassified and publicly released on 26 April 2012.

[34] *Soviet Concepts for Employment of Nuclear Weapons in a Conflict with NATO – Evidence from Warsaw Pact Military Exercises*, 24 March 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and publicly released on 18 July 2012. It should be noted that, as early as 1966, the Central Intelligence Agency had identified increased Soviet interest in the conduct of military operations without the use or the early use of nuclear weapons. See *Soviet Military Theorists Reappraise Nuclear War*, memorandum CIA/RR MM 66-6, dated September 1966, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released in March 1996, 2, 6 and 9. for an indication dating back to 1966 of growing Soviet interest in conventional operations under the threat of nuclear first use by the adversary see also John G. Hines, Phillip A. Petersen and Notra Trulock III, 'Soviet Military Theory from 1945–2000: Implications for NATO', *The Washington Quarterly*, Fall 1986: 122.

[35] 'Summary of interview with Army General Makhmut A. Gareev', John Hines, Ellis M. Mishulovich and John Shulle, *Soviet Intentions 1965–1985: An Analytical Comparison of U.S.-Soviet Assessments During the Cold War, Volume II: Soviet Post-Cold War Testimonial Evidence* (McLean, VA: BDM Federal, September 1995) 74. See also Hans Rühle and Michael Rühle, 'Warschaupakt plante nuklearen Überfall auf Westeuropa', *Neue Zürcher Zeitung*, 13 September 2008, in which they report that during the Warsaw Pact's first ever multinational exercise – *Buria* (Storm) – held in late September and early October 1961, during the tensest period of the Berlin crisis, simulated Soviet employment of nuclear weapons was executed just *three minutes before* NATO's simulated nuclear first use.

[36] The headquarters of Allied Forces, Central Europe (AFCENT) and its three land, air and naval component commands (LANDCENT, AIRCENT and NAVCENT) were located until early 1967 in Fontainebleau, France. The increasing distance – approximately 900 kilometres – between Fontainebleau and forward areas along the inner-German border where allied covering forces would be deployed in order to screen advancing Soviet forces prompted General Dr Hans Speidel, COMLANDCENT, to request in

(b) Contingency plans unsuited to manage situations other than a full-scale Warsaw Pact attack on Western Europe, even though NATO's strategic concept of 1957 had acknowledged the possibility of Soviet operations with limited objectives, such as infiltrations, incursions, . . . ;[37] and

(c) A strategy relying on prompt and large-scale nuclear use, for lack of sufficient conventional forces, that, in a crisis, risked encouraging uncontrolled and unnecessary escalation, rather than inducing restraint. As David S. Yost has aptly remarked, 'There was no real military advantage in using TNF if the Soviets replied in kind, and NATO could be left worse off than the Warsaw Pact, with great collateral damage in Germany.'[38]

Adoption of the flexible response strategy in 1967 was meant to rectify the latter two disconnects, by making NATO's responses to Soviet intimidation, coercion or aggression tailored to the circumstances of an emerging crisis or a developing attack.

After the Berlin Crisis, however, NATO's quest for a conventional capability aimed at diminishing reliance on the *early* use of nuclear weapons was postponed for over a decade by successive conventional force reductions,[39] notwithstanding the expanded

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Footnote 36 continued

1960 the relocation of his wartime headquarters from Margival, near Soissons, in France, to either a former Maginot Line fort in eastern France or buildings at Trier, Germany that had been vacated in 1958 by NATO's 4th Allied Tactical Air Force, upon its relocation to Ramstein air base. See 'LANDCENT Wartime Advanced Command Post', *Headquarters, AFCENT History for 1960*, classified NATO Secret, (Fontainebleau, France: Headquarters, Allied Forces Central Europe, 24 November 1961), downgraded to NATO Unclassified, July 2013, 18.

[37] MC 14/2 *Overall Strategic Concept for the Defence of the North Atlantic Treaty Area* (Washington, D.C.: NATO Military Committee, 1957). SACEUR's Berlin Contingency (BERCON) operations plans of the early 1960s were the first plans that the Alliance had ever developed for operations for a purpose and on a scale other than general war. *Contingency Plans, Excluding General War*, MCM-165-65, 18 November 1965 (Washington, D.C.: NATO Military Committee), NISCA, declassified and disclosed publicly on 13 April 1999. Historian John Duffield astutely called attention to the fact that the reference in MC 14/2 to the risk of limited Soviet aggression can rightly be considered as the conceptual birth of 'flexible response' and Beatrice Heuser duly recorded this counter-intuitive proposition in her book on Western nuclear strategies. Beatrice Heuser, *NATO, Britain, France and the FRG: Nuclear Strategies and Forces for Europe, 1949–2000* (Basingstoke: Macmillan, 1997), 40. Gregory W. Pedlow has traced SACEUR Lauris Norstad's thinking on making NATO strategy more flexible, 'Flexible Response before MC 14/3: General Lauris Norstad and the Second Berlin Crisis 1958–1962' *Storia Della Relazioni Internazionali*, 13, no. 1 (1998): 234–268.

[38] David S. Yost, 'The History of NATO Theater Nuclear Force Policy: Key Findings from the Sandia Conference', *The Journal of Strategic Studies* 15, no. 2 (June 1992): 251.

[39] These reductions included the loss of two French mechanised divisions, army- and corps-level troops, two brigades of *Nike-Hercules* surface-to-air missiles and seven fighter wings, following France's withdrawal from NATO's integrated command structure in 1966, as well as the withdrawal from West Germany, between 1966 and 1968, of a British infantry brigade and the equivalent of a US Army division (two mechanised brigades and an armoured cavalry regiment), as well as five US Air Force fighter and electronic warfare squadrons. Friedrich Wiener, *Forze Armate ed Armamenti dei Paesi della NATO* (Rome, Italy: Istituto per la divulgazione della storia militare, 1968), 84, 90 and 451–453; and Walter S. Poole, 'NATO Under Strain', *The Joint Chiefs of Staff and National Policy*, Volume IX: 1965–1968, (Washington, D. C.: Historical Division, Joint Chiefs of Staff, 2012), 336.

threat represented by the stationing of Soviet forces in Czechoslovakia, following the Warsaw Pact invasion in August 1968.[40] As Bruno Thoss has remarked, adoption of an ambitious forward defence posture oriented to defending allied territory as far forward as possible inevitably increased NATO's reliance on the early use of tactical nuclear weapons, in the absence of satisfactory conventional force improvements.[41]

Forward defence and deep operations as the pivot of the Cold War RMA

Often masked by the twists and turns of the transition to flexible response, it was the solution to the *first disconnect* exposed by the Berlin crisis, through adoption on 1 September 1963 of a forward defence posture along the FRG's eastern borders,[42] which had the most enduring impact on NATO's strategy for the rest of the Cold War, by shaping the conditions for the rise of a Cold War RMA. Once NATO had made the commitment not to yield West German (and other allied) territory under any circumstances in case of conflict, forward defence became the inalterable concept around which NATO organised its operational strategy for the remainder of the Cold War.[43]

Even though various conceptual constructs of the 1980s, such as the US Army's AirLand Battle doctrine of 1982, have often been presented as challenges to, or deviations from, forward defence, in reality they extended forward defence *forward*, by

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[40] Five divisions, army and *Front*-level units, and several air regiments. See *Capabilities of the Warsaw Pact Against NATO*, Special National Intelligence Estimate, SNIE- 11-17-68, 8 October 1968, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public, no date.

[41] Bruno Thoss, 'Aims and Realities: NATO's Forward Defense and the Operational Planning Level at NORTHAG', in *Blueprints for Battle*: *Planning for War in Central Europe, 1948–1968*, eds., Jan Hoffenaar and Dieter Kruger (Lexington: University Press of Kentucky, 2012) 28.

[42] The commitment to forward defence across the breadth of NATO's front line, from Norway to Turkey, had been a mainstay principle of Alliance planning since its inception. In practice, enduring conventional force deficiencies had made its operational implementation impractical. For a decade following the creation of the Western Union in 1948, NATO's operational strategy in Central Europe was anchored on a firm defence on the Rhine River, as the prelude to a hypothetical counter-offensive. The build-up of the *Bundeswehr* after 1955, as well as the large-scale availability of tactical nuclear weapons to US and other allied forces from 1957 onwards, offered the prospect of conducting a mobile defence well forward of the Rhine and motivated the move to a 'semi-forward defence' posture, along the Weser and Lech Rivers, on 1 July 1958. 'CENTAG Emergency Defense Plan (EDP) 2–58', *Annual History, United States Army, Europe, 1 July 1968- 30 June 1959*, classified Top Secret, 6 July 1960 (Heidelberg: Headquarters, USAREUR & 7th Army), downgraded to Unclassified, 48–49. The transition to a full forward defence became effective on 1 September 1963. *History for 1963*, 3340/CE/AG/1149/64, 16 October 1964, classified NATO Secret (Fontainebleau, France: Headquarters, Allied Forces, Central Europe), downgraded to NATO Unclassified (Mons, Belgium: Supreme Headquarters Allied Powers Europe, July 2013) 8.

[43] For an operational history of forward defence, see Phillip A. Karber, 'In Defense of Forward Defense', *Armed Forces Journal International*, May 1984: 27–50, Helmut R. Hammerich, 'Kommis kommt von Kompromiss: Das Heeer der Bundeswehr zwischen Wehrmacht und U.S. Army (1950 bis 1970)', in *Das Heer 1950 bis 1970: Konzeption, Organisation, Aufstellung*, eds. Helmut R. Hammerich et al (Munich: R. Oldenbourg Verlag, 2006), 131–154; Helmut R. Hammerich, 'Suddeutschland als Eckpfeiler der Verteidigung Europas', *Military Power Revue der Schweizer Armee* no. 2 (2011): 34–45; and Helmut R. Hammerich, 'Fighting for the Heart of Germany', in *Blueprints for Battle*, 155–174.

engaging Warsaw Pact lead and follow-on echelons while still deployed on their own territory, ahead of, and away from, the forward edge of the battle area. Despite appearances and allegations to the contrary, these concepts remained anchored in the notion that the most strategically compelling line of defence for NATO was, for sound operational as well as political reasons, the forward line of defence situated between the Weser and Lech Rivers and West Germany's eastern borders.[44] This principle gave rise in the 1970s to the imperative of 'winning the first battle,' which endured even under the more ambitious, manoeuvre-oriented schemes of the 1980s.

NATO's adoption of forward defence in the 1960s, and the resulting repositioning of defensive positions along West Germany's eastern borders, were interpreted by the East German leadership as a reflection of the Alliance's inherently aggressive military posture and intentions.[45] From the 1960s onwards, in an almost exact reverse mirror-image of NATO's forward defence strategy, the Warsaw Pact's strategy of *deep* operations aimed at breaching and overwhelming NATO's forward defences, through fire, manoeuvre and shock.[46] Denying NATO victory in the first battle could well have spelled the difference between success and failure in the execution of the Theatre Strategic Operation. The forward momentum built into the Soviet concept of ground force echelonment, the execution of a massive, theatre-scale air and anti-air operation, and the insertion of high-speed Operational Manoeuvre Groups (OMGs) into NATO's force deployment, to spearhead operational-strategic-scale encirclement operations, were all aimed at puncturing and overwhelming NATO's forward defences and at ensuring the TSO's early and irreversible success. Conduct of a TSO became the defining theme for nearly all Warsaw Pact exercises almost through the end of the Cold War.[47]

Forward defence became, therefore, the operational pivot for the competing strategies of the two alliances and the prism through which each side arrayed the components – operational concepts, organisational schemes, and technological applications – of its emerging RMA. These converging developments prompted an unprecedented degree of interaction between NATO and Warsaw Pact conceptual and force development processes that became salient from the mid-1970s onwards. A decade-and-a-half after the 1961 Berlin Crisis, the conditions for a Cold War RMA had been set in motion on both sides.

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[44] Drew Middleton, 'Air Superiority Key to NATO Defense', *The New York Times*, 3 October 1984. The operational aspects of terrain along West Germany's eastern borders were addressed in detail in Hugh Faringdon, *Strategic Geography: NATO, the Warsaw Pact, and the Superpowers* (London and New York: Routledge, 1989), 347–385.

[45] Jan Hoffenaar, 'East German Military Intelligence for the Warsaw Pact in the Central Sector', in *Blueprints for Battle*, 87.

[46] Major John G. Hines, 'The Principle of Mass in Soviet Tactics Today', *Review of the Soviet Ground Forces*, DDB1100-307-81 (Washington, D.C.: Defense Intelligence Agency), June 1981, 1–8.

[47] Dale Herspring has noted that, as early as 1963, Ogarkov had called attention to the over-riding importance of strategic command at the theatre level and reliance on deep operations. Dale R. Herspring, *The Soviet High Command, 1967–1989* (Princeton, NJ: Princeton University Press, 1990), 137–140.

The Soviet theatre-strategic operation and the rise of the Cold War RMA

By the mid-1970s, the Warsaw Pact's RMA was in full motion and increasingly transparent to the United States, thanks to the intelligence information supplied by Colonel Ryszard Kuklinski of Poland, Colonel Ghulam Dastagir Wardak of Afghanistan, and Soviet General Dmitri Polyakov.[48] The clandestine contribution of Kuklinski on Warsaw Pact operational concepts, command structure, and exercises, in particular, was of an unprecedented and unparalleled quality and duration.[49]

As evidenced by the nature and the scale of the *Zapad* 77 command post exercise[50], the pace of the negotiations over the adoption of Warsaw Pact 'wartime statutes'[51] and the standing-up of coalition high commands for the western and southwestern TVDs,[52] efforts to translate Ogarkov's conceptualisation of the RMA into a theatre strategic operation[53] had reached a high momentum. *Zapad 77* was described by Ogarkov as designed to test the capacity of a theatre high command to plan and synchronise the forward movement and engagement of six *Fronts* into West Germany.[54] The envisaged strategic operation also included the execution of a theatre-scale air and counter-air campaign across Western Europe and a sea-landing operation against Denmark.[55] Given the degree of mechanisation of Warsaw Pact forces in the mid-1970s and the massive scale of their logistical resupply in wartime with fuel,

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[48] Barrass, *The Great Cold War*, 394.

[49] As Aris Pappas, one of CIA's leading analysts dedicated to exploiting the information supplied by Kuklinski, has stated, Kuklinski's material 'virtually defined our knowledge. It was the touchstone. It was the basic standard.' Quoted in Benjamin Weiser, *A Secret Life: The Polish Officer, His Covert Mission and the Price He Paid to Save His Country* (New York: Public Affairs, 2004), 245. Robert Gates, Director of Central Intelligence, described Kuklinski as 'one of the most important CIA sources of information on the Soviet military of the Cold War period'. Robert M. Gates, *From the Shadows* (New York: Touchstone, 1996), 238.

[50] *Materials of the critique of the operational-strategic command-staff exercise Zapad-77*, 10–15.

[51] *The Soviet Union's Control of the Warsaw Pact Forces*, SOV 83-10175CX, October 1983, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012.

[52] In wartime, the command element and operational staff of the two TVD high commands would have been housed in two large, purpose-built bunkers, located at Legnica, Poland, and an undisclosed location in Bulgaria. The highly secret project under which these bunkers were built, code named *Albatross*, was disclosed to the Central Intelligence Agency by Colonel Kuklinski. Weiser, *A Secret Life*, 105–106.

[53] Adamsky, 'Through the Looking Glass', 270.

[54] The command post exercise *Zapad* 77 in spring 1977 stands out as the most ambitious attempt, up to that date, since the establishment of the Warsaw Pact, to address the massive command and control and synchronisation challenges associated with the planning and conduct of TVD-scale strategic operations, in that instance in the context of the western TVD. The command post exercise *Soyuz* 78 seems to have been aimed at exploring similar challenges in the southwestern TVD. It was staged on Romanian territory, with the participation of Romanian forces, a posture that contrasts with Romania's refusal in March 1980 to sign the Warsaw Pact's new 'wartime statutes'. *The Warsaw Pact SOYUZ 78 Exercise*, TS 788321, 22 September 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012.

[55] On the strategic importance for the ultimate success of the Soviet strategic operation of Denmark's defeat and occupation, see Christopher N. Donnelly and Phillip A. Petersen, 'Soviet Strategists Target Denmark', *International Defense Review*, August 1986: 1047–1051; and Frede P. Jensen, 'The Warsaw Pact's

ammunition, spare-parts, food and water, a six-*Front*-deep strategic operation would have involved the synchronised forward movement of hundreds of thousands of troops and tens of thousands of tracked and wheeled vehicles, with the support of thousands of fixed- and rotary-wing aircraft, across a geographically restricted theatre and into densely populated areas.[56] Indisputably, such an offensive would have been, by far, the largest military operation of all time, posing traffic control, airspace management and logistical resupply challenges on an unprecedented scale.[57] The scale of the challenge was underscored by Ogarkov during *Zapad* 77's post-exercise critique, in which he lamented the insufficient level of automated data processing means available to support the planning and conduct of such a massive undertaking.[58]

Zapad 77 also rehearsed the large-scale employment of nuclear weapons in support of offensive operations, nominally in response to but, in effect, ahead of NATO's own nuclear use, and highlighted the absolute requirement to degrade NATO's nuclear forces by conventional means before the start of nuclear operations, including by the use of 'search and destroy' teams ferried by helicopter.[59]

Despite the many shortcomings which it revealed, exercise *Zapad* 77 confirmed for the Soviet General Staff the compelling strategic logic of the TSO as the enabling mechanism for developing and applying a higher form of operational art, one at the cutting edge of modern warfare. Tellingly, when addressing air defence coordination shortcomings exposed by the exercise during the post-exercise critique of *Zapad* 77, Marshal Dmitri Ustinov, the Soviet minister of defence, stated that 'It is necessary to

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Footnote 55 continued

Special Target: Planning the Seizure of Denmark', in Mastny, Holtsmark and Wenger, *War Plans and Alliances*, 95–117.

[56] The formidable density of such a deployment led assessments of a putative NATO-Warsaw Pact conflict conducted under the auspices of NSSM-186 to give greater attention to 'force-to-space' ratios, alongside 'force-on-force' ratios, and to the relative ability of the two opposing alliances to counter the actions of the adversary by delivering fire, rather than amassing force, in a precise and timely way.

[57] The vulnerability of Soviet lines of communication across Poland to attack by NATO during a conflict, notably bridges over the Vistula and Oder Rivers, is described in a 1977 Polish General Staff document outlining the scenario of a war game that was played in February 1978. *War Game Scenario – Central Europe – 1978*, TS 788269, 17 August 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012, 23–25.

[58] *Materials of the critique of the operational-strategic command-staff exercise* Zapad—77, 44. The first large-scale use of computers in support of the planning of a theatre-strategic operation was reportedly rehearsed during the command post exercise *Soyuz* 75. Oliver Bange, 'Comments and Contextualisation of Polish Documents related to SOYUZ 75 and SHCHIT 88', CWIHP e-Dossier No. 20, (Zurich: Cold War International History Project, 20 February 2010), 4.

[59] Reliance on such heliborne teams was a recurrent theme of successive Warsaw Pact military exercises in the 1970s. See *Soviet Concepts for the Employment of Nuclear Weapons in a Conflict with NATO – Evidence from Warsaw Pact Military Exercises*, 24 March 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 July 2012, 8 and 10.

ponder well what else should be done from an *organizational*, *operational* and *technical* standpoint to successfully resolve them.'[60]

From 1977 onwards, *Zapad* 77 became the template for successive, theatre-scale, command post and field training exercises in the western and southwestern TVDs aimed at rehearsing a strategic operation in a theatre of military operations. *Zapad* 77 was followed notably by *Soyuz* 80, 81 and 83, and *Zapad* 81 in the western TVD and *Soyuz* 78 and *Sh'chit* 82 in the southwestern TVD.[61] Exercise *Soyuz* 78 apparently replicated the aims of *Zapad* 77 in the southwestern TVD.[62] The scale and regularity of these exercises bear witness to the ambition and persistence of Ustinov, Ogarkov and Kulikov to make the Warsaw Pact a credible operational coalition, despite the bitter legacy of the Warsaw Pact's invasion of Czechoslovakia, the growing burden of the USSR's engagement in Afghanistan, and the deepening political crisis in Poland.

The establishment of high commands for the western and southwestern TVDs was accompanied by the construction of dedicated command and control bunkers in Poland and Bulgaria and the adoption of a new, unified readiness system for the transition of Warsaw Pact forces from peace to war, under the code names *Albatross* and *Monument*, respectively.[63] A comparison of the 1980 'wartime statutes' with the 1969 'peacetime statutes' suggests that the Warsaw Pact's supreme high command kept primarily training and equipment standardisation responsibilities, while the two TVD high commands would have assumed wartime responsibilities under the direction of

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[60] *Materials of the critique of the operational-strategic command-staff exercise* Zapad—77, 72. Italics added.

[61] The aim of *Soyuz* exercises was, it seems, the training of senior-level staffs and field command elements in the execution of a theatre-strategic operation. Although exercises in the *Soyuz*, *Zapad* and *Sh'chit* series had been conducted from the late 1960s onwards – there is evidence that *Soyuz* exercises were conducted in the western TVD in 1969, 1974 and 1975 and in the southwestern TVD in 1973 – *Zapad* 77 marked a turning point by centralising command and control of a theatre-strategic operation in the hands of yet-to-be-established permanent TVD high commands. See *Planning, Preparation, Operation and Evaluation of Warsaw Pact Exercises*, undated, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012. On exercise *Zapad* 69, see Matthias Uhl, 'Soviet and Warsaw Pact Military Strategy from Stalin to Brezhnev', in Hoffenaar and Kruger, *Blueprints for Battle*, 47–48. On exercises *Soyuz 81* and *Sh'chit 82*, see Frank Steinert, 'Command Staff Exercise Soyuz-81', DDB-1100-329-81, *Review of the Soviet Ground Forces* (Washington, D.C.: Defense Intelligence Agency), October 1981, 1–2, and Major James Brusstar and Frank Steinert, 'Exercise Shield-82', DDB-1100-412-83, *Review of the Soviet Ground Forces* (Washington, D.C.: Defense Intelligence Agency), May 1983, 1–3.

[62] *The Warsaw Pact SOYUZ 78 Exercise*, TS#788321, 22 September 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012.

[63] The *Monument* alert and readiness system is described in *Background Information on the Development of the Unified Wartime Command System for the Combined Armed Forces of the Warsaw Pact*, FIRDB-312/01197-83, dated 10 June 1983, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public, no date, 10–12. The *Albatross* installation in Poland is addressed in *Warsaw Pact Exercise 'Center', Far Eastern Theater of Operations, Installation 'Albatross'*, dated 8 June 1979, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 June 2012, 6.

the Soviet General Staff, although the division of labour between the former and the latter was kept deliberately ambiguous by Moscow, as a means to assuage East European sensitivities over the extent of Soviet domination and control.[64]

Often ahead of these command arrangements, the other constituent parts of the TSO were coming into place at a rapid pace. The introduction of the Mi-24 *Hind* attack and transport helicopter in 1977 – which had no equivalent in NATO – was accompanied with the build-up of airmobile and special operations forces (*Spetsnaz*) trained in the performance of air assault and vertical envelopment missions into the depth of the enemy, with the purpose of identifying main concentrations of NATO land forces and disrupting their movement and their defensive positions, as well as providing intelligence on the location and readiness status of NATO nuclear delivery systems.[65]

The conduct of a theatre-wide air/counter-air operation, involving six to eight massed air strikes over a period of five days, was aimed at 'pinning-down' NATO's airpower and interdicting allied air sorties, as well as degrading NATO's nuclear forces and operational reserves.[66] It led to the establishment of two air armies, headquartered at Legnica in Poland and at Vinniytsa in Ukraine, and subordinated to the western and southwestern TVD high commands, respectively. These two air armies were equipped with large numbers of Su-24 *Fencer* fighter-bombers specialised in the execution of long-range air interdiction sorties, including at night and in adverse weather conditions.

In parallel, Warsaw Pact forces were introducing rapidly into their inventory the modern assets – main battle tanks, armoured fighting vehicles, self-propelled artillery, mobile anti-tank and surface-to-air missiles, and assault bridging equipment – necessary to conduct a TSO, notably for breaking through NATO's forward defences into the depth of allied deployments.[67] During the period 1973–1983, armour production in the Soviet Union amounted to approximately 3,000 main battle tanks a

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[64] *The Soviet Union's Control of the Warsaw Pact Forces*. Of note, *Zapad* 77 was directed by Marshals Ustinov and Ogarkov, while *Soyuz* exercises seemed to have been directed consistently by Marshal Kulikov.

[65] *Soviet Concepts for Employment of Nuclear Weapons in a Conflict with NATO – Evidence from Warsaw Pact Military Exercises*, 5, 6 and 10.

[66] *The 'Air Operation': The Warsaw Pact Strategy for Achieving Air Superiority*, SR 79-10137C, dated October 1979, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public, no date. The large scale of the envisaged massed air strikes is indicated in *Report on Visit of Polish Armed Forces General Staff delegation to USSR Armed Forces General Staff and the Combined Command of the Combined Armed Forces*, FIRDB-312/02329-80, 8 October 1980, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public, no date, 31. See also Phillip Petersen, 'Soviet Air and Antiair Operations', *Air University Review* 36 (March–April 1985): 36–54; and Mastny and Byrne, *A Cardboard Castle*, 482.

[67] The scale of the military build-up, from the mid-1960s through the mid-1970s, of Soviet and other Warsaw Pact forces deployed opposite NATO is documented in *Warsaw Pact Forces Opposite NATO*, National Intelligence Estimate NIE 11-14-75, 4 September 1975, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 19 June 2008, 33–42.

year.[68] By the late 1970s, the Warsaw Pact had 10,000 more tanks than NATO in Central Europe.[69] Lessons learned from the performance of the Egyptian Army during the early phases of the 1973 *Yom Kippur* War taught the Soviet Army the advantages in a war of deploying anti-tank guided missiles (ATGMs) to counter NATO armoured counter-attacks.[70] The proliferation of ATGMs with NATO forces in the late 1970s eventually drove the Soviet Army to protect its tanks with 'explosive reactive armour', rendering them in many cases invulnerable to antitank hits.[71]

Furthermore, while Soviet writings in the early 1980s gave considerable prominence to the emergence within NATO forces of so-called 'reconnaissance strike complexes,'[72] the Warsaw Pact was ahead of NATO in deploying a long-range self-propelled howitzer and multiple-rocket launcher (MRL), in the form of the 2S3 152 mm howitzer and the BM-27 220mm MRL, respectively, for deep attack. The BM-27 had a range of 40 kilometres – a range sufficient to execute effectively counter-battery fires against NATO's own deeply-deployed fire-support systems – and could deliver high-explosive conventional rounds, cluster munitions and fuel-air explosives to that end, as well as scatterable mines to prevent the forward movement of NATO armoured counter-attacks. The BM-27 was followed by the more formidable BM-30 300mm MRL, with a range of 70 kilometres, which, in addition to various types of anti-tank and anti-personnel munitions and sub-munitions, reportedly could deliver a mini-drone to facilitate overhead target acquisition of enemy positions. The BM-30 began approximating a genuine, autonomous reconnaissance-strike complex. However, it had not been widely deployed opposite NATO forces by the time of the Cold War's end.

A final step in completing the architecture of the theatre-strategic operation was the resurrection of the World War II Mobile Group in the form of specially-configured OMGs of variable scale, from division to corps-size, tasked with leading the transformation of the initial breakthroughs into operational-strategic-scale encircle-

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[68] *Soviet Tank Programs*, NI IIM84-10016/DS, classified Secret, June 1985 (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public in October 1999, 3.

[69] Major General Paul F. Gorman, 'U.S. Intelligence and Soviet Armor', *Studies in Intelligence*, vol. 24, Spring 1980, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public in March 2004, 4. A US Army officer and a former commander of a US Army division in the V (US) Corps in West Germany, General Gorman was at the time the US intelligence community's national intelligence officer for general purposes forces.

[70] Phillip A. Karber, 'The Soviet Anti-Tank Debate', *Survival*, May–June 1975: 105–111; 'Already in Service: The 2nd Generation of Soviet Anti-tank Missiles', *International Defense Review* 11, no. 1 (January 1978): 15–17.

[71] On the characteristics of Soviet tanks and associated defensive measures against NATO's improving anti-armour capabilities, see *Soviet Tank Programs* and Malcolm W. Browne, 'Threat to NATO Is Seen in Armor On Soviet Tanks', *The New York Times*, 12 July 1987.

[72] Milan Vego, *Recce-Strike Complexes in Soviet Theory and Practice* (Fort Leavenworth, KS: Soviet Army Studies Office, June 1990).

ment operations.[73] Reportedly, the employment of OMGs was first tested in 1981, during the *Yug* 81, *Soyuz* 81 and *Zapad* 81 exercises.[74] *Zapad* 81, held in September 1981 in the western USSR, was the natural follow-on to *Zapad* 77, the four intervening years having been a period of fast-paced maturation of the TSO. Like *Zapad* 77, *Zapad* 81 was directed by Ustinov and Ogarkov, rather than by Kulikov, and involved multiple *Fronts*.[75] Unlike *Zapad* 77, however, *Zapad* 81 was a two-sided, field training exercise – reportedly the largest such Soviet exercise since the end of World War II – and included the participation of Soviet forces only.[76] Of note, the attacking forces, which simulated the Warsaw Pact, were led by General Yevgenni Ivanovskiy, who, until a year earlier had been the commander of the Group of Soviet Forces in (East) Germany and presumably had an excellent knowledge of the strengths and weaknesses of NATO forces stationed in West Germany. The defending side was led by General Stanislav Postnikov, who in 1988 replaced Ogarkov as the commander of the western TVD. Every aspect of the TSO was rehearsed during *Zapad* 81, including the commitment of a division-size OMG, although the exercise's field training dimension made actions by participants appear as excessively pre-scripted.

The employment of an OMG featured prominently again in the *Soyuz 83* command post exercise, with a three-division-strong OMG following up behind and, then, moving through the lead armies of a first-echelon *Front* into the depth of NATO's Northern Army Group (NORTHAG) area in northern West Germany.[77] Exercise *Soyuz* 83 marked, seemingly, the climax of Soviet offensive-oriented planning and, in effect, the completion of the Warsaw Pact's Cold War RMA.[78] The exercise's conduct showed a growing emphasis on initiating operations from pre-planned attack locations, with little warning, and on high-speed manoeuvre, in order to preempt NATO and negate the higher readiness and ever-improving conventional capabilities

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[73] Christopher N. Donnelly, 'The Soviet Operational Manoeuvre Group: A New Challenge to NATO', *International Defense Review* 15, no. 9 (1982): 177–186; *The Soviet Operational Maneuver Group*, SOV 83-10034, February 1983, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public in 1999.

[74] The command post exercise *Yug* 81 is mentioned by both Beatrice Heuser and Christoph Bluth as the first exercise to include employment of an OMG. Heuser, *Warsaw Pact Military Doctrines*, footnote 42, 454; and Christoph Bluth, 'Offensive Defence in the Warsaw Pact: Reinterpreting Military Doctrine', *The Journal of Strategic Studies* 18, no. 4 (December 1995): footnote 26, 75. Oliver Bange makes reference to *Soyuz* 81. Bange, 'Comments on and Contextualisation of Polish Documents', 5.

[75] *Comments on Exercise 'ZAPAD-81'*, FIRDB-312/02950-81, 18 September 1981, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 August 2008, 4.

[76] Arch Shero and Richard Oden, 'Exercise Zapad-81', *Review of the Soviet Ground Forces*, DDB-1100-362-82 (Washington, D.C.: Defense Intelligence Agency), April 1982, 1–9. One can speculate that keeping participation restricted to Soviet forces aimed at protecting sensitive operational details from Warsaw Pact partners associated with the planning and execution of a theatre-strategic operation.

[77] Hans Frank, 'Die Westgruppe der Truppen (WGT)', in *NVA Anspruch und Wirk-lichkeit*, ed. Klaus Naumann (Berlin: Verlag E.S. Mittler & Sohn GmbH, 1993), 333–344.

[78] Heuser, *Victory in a Nuclear War*, 321; and Bange, 'Comments on and Contextualisation of Polish Documents', 6–7.

of NATO forces for both forward defence and follow-on forces' attack.[79] *Soyuz* 83 reflected, seemingly, an acknowledgement by the Soviet General Staff that, in the light of these new operational and technological realities, successful execution of the TSO required 'front-loading' the three first-echelon *Fronts* and reducing reliance considerably on the forward movement across Eastern Europe and subsequent engagement of the three second-echelon *Fronts*.

Soyuz 83 was followed by *Soyuz* 84 in the southwestern TVD, apparently oriented to an attack to conquer the Turkish Straits[80], and complemented by *Zapad* exercises in the western TVD in 1983 and 1984 that reportedly emphasised counter-measures against NATO's maturing deep attack capabilities and the employment of Soviet reconnaissance-strike complexes[81], as well as a short-notice attack capability that might have been used in a conflict to seize a geographically-exposed West German city as a bargaining chip.[82]

The combination of the higher readiness of East German and Soviet forces stationed in the GDR noted in the early 1980s and the OMG's emergence helps explain NATO's growing concern at that time that the Warsaw Pact might have been pursuing a combat and logistical capability to attack from an un-reinforced, 'standing-start' posture, with little warning.[83] A revised assessment by the US intelligence community in 1984 of Soviet logistical stockpiles stored in East Germany gives credence to that theory.[84] Observation of Soviet ammunition stocks in East Germany following the end of the Cold War indicated that NATO had grossly under-estimated the Warsaw Pact's capacity to initiate operations against NATO without a massive resupply effort from the western USSR.[85] In effect, in the early 1980s, the Soviet concept of 'meeting engagement' was assuming a new meaning, this time in the form of preemption of NATO's mobilisation in the initial, conventional phase of a war in Europe.

Awareness of the risk that, in a crisis, the USSR might be tempted to undertake a so-called 'standing-start' attack, with virtually no warning and a limited number of

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[79] Document no. 99, Mastny and Byrne, *A Cardboard Castle?*, 56 and 481–482.

[80] Miroslav Lazanski, 'Warsaw Pact Maneuvers: How To Reach the Bosporus', *East Europe Report* JPRS-84-046 (Washington, D.C.: Foreign Broadcast Information Service), 11 April 1984, 1–5.

[81] Adamsky, *Culture of Military Innovation*, 36–37.

[82] 'New Soviet tack seen in exercise in Germany', *The New York Times*, 14 July 1984.

[83] Document no. 97, Mastny and Byrne, *A Cardboard Castle?*, 470; *The Readiness of Soviet Ground Forces*, NI-IIM-82-10012, November 1982, classified Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public in October 1999; Graham H. Turbiville, Jr., 'Emerging Soviet Approaches to Mobilization', in *European Security Policy after the Revolutions of 1989*, ed. Jeffrey Simon (Washington, D.C.: National Defense University Press, 1991) 85; and See Sangho Lee, *Deterrence and the Defence of Central Europe: The British Role From the Early 1980s to the End of the Gulf War*, D. Phil. dissertation (London: King's College, August 1994), 116–117.

[84] *Soviet Military Rear Services in East Germany*, SOV-84-10006JX, February 1984, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 14 July 2010, 1.

[85] 'East German Army Masked Severe Flaws Behind Scenes', *The Baltimore Sun*, 2 December 1990. On the scale of Soviet preparations, see also John J. Yureshko, 'Emerging Soviet Approaches to Mobilization', in Simon, *European Security Policy*, 85.

forward-deployed forces, in order to catch NATO forces unaware in their garrison locations or, at best, on a hasty march to their defensive positions, had driven NATO to anticipate a situation where generating a cohesive forward defence would not have been possible. Ensuring that allied forces could cope with such an extreme and fluid situation had prompted the development of specific counter-measures. These included a specific 'Counter-Surprise' alerting system, distinct from the regular, step-by-step NATO Alert System, as well as the conduct several times a year of no-notice alerting exercises, nick-named *Quick Train* in the 1960s and *Active Edge* in the 1970s and 1980s.[86]

Together with the large-scale deployment of the SS-20 intermediate-range ballistic missile, the TSO reflected a well-thought-out and deliberate strategy to defeat in a conflict the two pillars of NATO's strategy – forward defence and flexible response. This would have been achieved by overwhelming NATO's conventional defences, through a combination of an initial, knock-out blow and subsequent, relentless annihilation, and making a NATO nuclear first use and follow-on nuclear escalation, if necessary, either infeasible or unattractive. According to Soviet General Andrian Danilevich, the deployment of the SS-20 'was a breakthrough, unlike anything the Americans had. We were immediately able to hold all of Europe hostage.'[87] Half-a-century of lessons learned, and conceptual and force development rooted in the Red Army experiments of the 1930s and the experience of World War II had reached their pinnacle.

The Soviet challenge and NATO's post-Vietnam strategic renaissance

As the Soviet RMA was gathering momentum, the attention of the United States turned rapidly to the defence of Europe, following its withdrawal from Vietnam in 1973. The steady build-up of Warsaw Pact forces opposite NATO had prompted growing alarm in Washington and in Europe about the poor state of the Alliance's conventional forces and the risk that the Soviet Union might become militarily predominant.[88]

The appointment of General Alexander Haig to the position of Supreme Allied Commander, Europe (SACEUR) in December 1974, as the successor to General

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[86] *Allied Command Europe Counter-Surprise Military Alert System*, RDC/46/57, classified NATO Secret, 30 January 1957 (Paris: North Atlantic Treaty Organization) NISCA, declassified and disclosed to the public in 1996.

[87] Colonel-General Andrian A. Danilevich, quoted in Gordon S. Barrass, 'The Renaissance in American Strategy and the Ending of the Great Cold War', *Military Review*, January–February 2010: 103. General Danilevich was the leader of a Soviet General Staff team that drafted the three-volume *Strategy of Deep Operations (Global and Theatre)* that in the 1970s and 1980s was the capstone document guiding Soviet operational planning.

[88] This increasing level of concern had been amplified by a succession of highly publicised studies, notably Jeffrey Record, *Sizing Up the Soviet Army* (Washington, D.C.: The Brookings Institution, 1975); General Robert Close, *L'Europe sans Defense?* (Bruxelles: Editions Arts & Voyages, 1976); and Senators Sam Nunn and Dewey F. Bartlett, *NATO and the New Soviet Threat*, report to the Senate Armed Services Committee, 95th Congress, 1st Session, 24 January 1977 (Washington, D.C.: Government Printing Office, 1977).

Andrew Goodpaster, ushered the most far-ranging transformation of NATO since General Lauris Norstad's tenure as SACEUR a decade and a half earlier. Within months of taking command at SHAPE headquarters in Mons, Belgium, Haig set in motion a bold and wide-ranging process aimed at modernising the way NATO would defend Western Europe and at challenging the momentum of the Warsaw Pact's own operational and technological transformation. The centrepiece of this conceptual revolution was a broader approach to planning and the conduct of operations on an increasingly large scale.

The starting point of Haig's transformation was a series of 'flexibility studies' that Goodpaster had proposed earlier in 1974 and that the United States had recommended that NATO pursue actively.[89] The first and most important study focused on NATO's Central Region opposite East Germany and Czechoslovakia. It was completed in time for its examination by NATO defence ministers in December 1975 and proposed 236 remedial measures to enhance the readiness and capability of Central Region forces.[90] This study became the springboard for Haig to launch an unprecedented series of four interdependent initiatives:

(i) Initiating the so-called 'SACEUR's 3Rs' programme – Readiness, Reinforcement and Rationalisation – aimed at improving the ability of Alliance forces to transition rapidly from a peacetime to a wartime posture, by means of a rigorous operational readiness evaluation and certification process,[91] expanding NATO's rapid reinforcement capacity and enhancing mutual support among allied forces to achieve a rationalized use of limited resources;[92]

(ii) Linking previously autonomous multinational and NATO exercises conducted every autumn into a single exercise series, under the name *Autumn Forge*, extending geographically from Norway to Turkey and, chronologically, from September through November;[93]

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[89] *Flexibility Study*, NATO Military Committee Memorandum for the Supreme Allied Commander Europe, MCM-71-74, classified NATO Confidential, 1 October 1974, (Brussels: NISCA) declassified and disclosed to the public on 12 March 2007; and *SACEUR's Flexibility Study*, NATO Military Committee Memorandum for the Secretary General, North Atlantic Treaty Organization, MCM-76-75, classified NATO Confidential, 14 November 1975 (Brussels: NISCA) declassified and disclosed to the public on 17 March 2010.

[90] Final Report - *Study on Flexibility of NATO Forces in the Central Region (U)*, 1240.3/20-5-1/S9/75 (Mons, Belgium: Supreme Headquarters Allied Powers Europe), classified NATO Secret, 23 October 1975, declassified and disclosed to the public on 25 February 2014.

[91] *History of Headquarters Allied Forces Central Europe 1977 and 1978*, 3340/ACCGSX/0001/S2000/80 (Brunssum, the Netherlands: Headquarters, Allied Forces Central Europe), 12 November 1980, classified NATO Secret, declassified and disclosed to the public on 4 March 2014, 22.

[92] Yves Robins, 'SACEUR and the three 'Rs', *Aviation & Marine International*, no. 47 (September 1977): 11; Morris Honick, 'Haig: The Diplomacy of Allied Command', in *Generals in International Politics: NATO's Supreme Allied Commander, Europe*, ed. Robert S. Jordan (Lexington: The University Press of Kentucky, 1987), 166 and 171.

[93] *Study on Flexibility of NATO Forces in the Central Region (U)*, VII-4; and 'Autumn Forge 75', *Flight International*, 30 October 1975, 656.

(iii) Expanding the number of army and air force units stationed in the United States that could reinforce US forces in Europe, under the dual-basing concept, and participate in the army's REFORGER and the air force's *Crested Cap* rapid reinforcement exercises, as part of *Autumn Forge*; and

(iv) Consolidating previously separate American, British and Canadian reinforcement plans into a single SACEUR Rapid Reinforcement Plan (RRP), with an expanded focus from the Alliance's Central Region to the allies on NATO's flank regions (Denmark, Norway, Italy, Greece and Turkey). The initial version of the RRP was published in November 1978.[94] Development of the RRP was accompanied by the construction and funding by NATO of warehouses to store pre-positioned equipment for US Army reinforcements and of hardened aircraft shelters at so-called 'collocated operating bases' to provide protection from air attack to incoming American, British and Canadian combat aircraft. Bilateral lines of communication and wartime host nation support agreements were also concluded, to facilitate the reception of reinforcements in continental Europe and their onward movement to pre-identified wartime defensive positions.[95]

Together, Haig's measures set the conditions for NATO's own Cold War RMA to take root over the next five years.

Political support for these measures was pursued by means of a long-term defence programme, developed by the Carter administration, at the initiative of ambassador Robert 'Blowtorch' Komer,[96] and adopted by the Alliance at its 1978 summit meeting in Washington.[97] As part of the LTDP, the United States formalised a commitment to have 10 divisions deployed and combat ready at their General Defence Plan (GDP) positions within 10 days of a reinforcement decision.[98] This pledge was known as the '10-in-10' commitment.[99]

The centrepiece of this commitment was the doubling of the size of the US Army equipment stockpile pre-positioned in Europe, from three to six divisional sets, to support the deployment of a three-division-strong US Army corps – the III (US) Corps stationed in peacetime in the United States – in order for NATO to be able to counter effectively a Soviet breakthrough and penetration in the exposed NORTHAG area.[100] The equipment for the corps's three component divisions was pre-positioned

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[94] *History of Headquarters Allied Forces Central Europe 1977 and 1978*, 16.

[95] Brigadier General Walter W. Kastenmayer, 'Reinforcements and Prepositioning', *NATO's Fifteen Nations* 27, no. 5 (October–November 1982): 38–44.

[96] Bob Komer had developed the concept of a NATO long-term defence programme while at The Rand Corporation and had become in 1977 special advisor for NATO Affairs to the US secretary of defence in the Carter administration, Harold Brown.

[97] Robert W. Komer, 'NATO's Long-Term Defence Programme: Origins and Objectives', *NATO Review*, June 1978: 9–12.

[98] General Defence Plans, known as Emergency Defence Plans in the 1950s and 1960s, were NATO's principal war plans for conventional defence operations in the 1970s and 1980s.

[99] Robert W. Komer, 'The Rejuvenation of Seventh Army', *Armed Forces Journal International*, May 1983, 54.

[100] *Study on Flexibility of NATO Forces in the Central Region (U)*, III-6.

at newly constructed warehouses in northern Germany and in the three Benelux nations. In addition, starting in 1978, a US Army armoured brigade, labelled 'Brigade 75', was stationed at Garlstedt, near the city of Bremen, in West Germany's northern half, marking the first time since the creation of NATO in 1949 that US land forces had been based in that part of the country.[101] That brigade's mission was to operate as the III Corps's lead element and to establish a close relationship in peacetime with the headquarters of AFCENT, as well as that of NORTHAG and those of the latter's four component army corps.[102] As a result of these steps, the United States reinforcement capability for the Central Region alone was doubled in size for land forces and tripled for air forces.[103]

In parallel, Haig worked secretly with the French defence staff to facilitate a French contribution to NATO's forward defence operations in a reinforcement role, should France, as a non-integrated ally since 1966, decide to take part, building upon the undertakings agreed upon in successive, highly confidential agreements between French and NATO commands dating back to the presidency of General de Gaulle.[104] Together, these undertakings ensured that, once implemented, the Alliance would have available two powerful sets of reserve forces – the US Army's III Corps in the NORTHAG area and the First French Army in the Central Army Group (CENTAG) area – to counter and repel Soviet operational-strategic-scale encirclement operations aimed at isolating and annihilating NATO's forward defences. The dynamic nature of the operational competition between NATO and the Warsaw Pact was now becoming tangible and visible – in a war in Central Europe, between

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[101] 'U.S. Combat Unit Set for Duty in North Germany', *The International Herald Tribune*, 22 August 1975. On the operational rationale for the establishment of the US Army's Texas-based III Corps as AFCENT's main reserve formation, see 'The Northern Army Group (NORTHAG) Stationing Concept', *1975 Annual Report of Major Activities, 1 January to 31 December 1975*, classified Secret (Heidelberg: Headquarters, US Army, Europe and Seventh Army), 15–23, pages downgraded to Unclassified on 19 January 2012; and 'Brigade 75 and the NORTHAG Stationing Concept', *1976 Annual Historical Review, 1 January to 31 December 1976*, classified Secret (Heidelberg: Headquarters, US Army, Europe and Seventh Army), 1–10, pages downgraded to Unclassified on 19 January 2012.

[102] Remarkably, a Polish *Front*-level command post exercise, *Lato* 74, conducted in June 1974, rehearsed the engagement of Polish and Soviet forces against the III (US) Corps – labelled the 'super-corps' – several years before it was committed to NATO and a decade before its equipment had been stored at pre-positioning sites in Western Europe to enable its rapid deployment in a crisis, suggesting excellent Warsaw Pact intelligence on US Army post-Vietnam planning for NATO. *Exercise Lato-74*, 20 October 1978, classified Top Secret (Langley, VA: Central Intelligence Agency) CIA FOIA Electronic Library, declassified and released to the public on 18 July 2012.

[103] General Charles A. Gabriel, 'Tactical Air Reinforcement for Europe', *NATO's Sixteen Nations* 29, no. 4: 91–97.

[104] The first such confidential agreement regulating the possible participation of French forces in NATO-led collective defence operations in the southern half of West Germany, following France's withdrawal from NATO's integrated military structure in July 1966, was the Ailleret-Lemnitzer Agreement of 22 August 1967 between the French chief of defence staff, General Charles Ailleret, and General Lyman Lemnitzer, then the SACEUR. David S. Yost, *France and Conventional Defense in Central Europe* (Boulder, CO, and London: Westview Press, 1985) 14; and Claude Cartigny, 'La France quitte les organismes militaires de l'OTAN', *Recherches internationales* 75, no.1 (2006): 146.

10 and 20 Warsaw Pact armies, subordinated to between three to six *Fronts*, would now be confronted by up to 12 NATO army corps – three West German, three American, and one each contributed by the United Kingdom, the Netherlands, and Belgium, as well as, possibly, up to three French corps – controlled by two army groups.

In his quest for an alliance that could stand up operationally to the Warsaw Pact, Haig was seconded by Generals George Blanchard and Franz-Joseph Schulze. Blanchard had taken command of the US Army in Europe and, concurrently, of CENTAG at Heidelberg in June 1975, after having headed the VII (US) Corps in Stuttgart for two years. Schulze, who had been Haig's deputy chief of staff for plans and operations at SHAPE and, in effect, his senior war planner, had become commander-in-chief, Allied Forces, Central Europe (CINCENT) at Brunssum, the Netherlands, in January 1977 (the same month that Ogarkov was appointed chief of the Soviet General Staff). Now he was Haig's major subordinate commander for NATO's Central Region (the functional counterpart of the commander of the western TVD at Legnica, Poland) and Blanchard's boss.[105]

Upon becoming CINCENT, Schulze's main focus of attention became giving the operational level of command the preeminence it had lost and developing a single, theatre-wide approach to the conduct of allied land and air operations between the Baltic Sea and the Alps. To ensure that these concepts would become a unifying theme, the subject of AFCENT's annual commanders' study period in February 1978 – *Central Fortress* 78 – was appropriately titled 'The Combined Land/Air Battle'. Chaired by Schulze, it involved all of the Central Region's land and air commanders, as well as that of General Donn Starry, at the time the commanding general of the US Army's Training and Doctrine Command (TRADOC), who briefed the audience on 'Transatlantic Views on the Land/Air Battle in Central Europe.'[106] A month later, Schulze directed *Crested Eagle* 78, the biennial Central Region-wide command post exercise designed to rehearse the execution of NATO's conventional war plans. A main focus of *Crested Eagle* 78 was the employment of the new reinforcements made available to NATO by the United States.[107] The close coincidence in time and conceptual overlap between *Zapad* 77, staged in May-June 1977 with the aim of exercising the command and control arrangements for a TVD-scale offensive into Western Europe, and exercises *Central Fortress* 78 and *Crested Eagle* 78, held less than a year later, with the aim of refining concepts, plans and procedures to conduct a joint land/air campaign to defend West Germany, is remarkable. *Central Fortress* 78 and *Crested Eagle* 78 were followed, over the next two years, by *Central Fortress* 79 and *Crested Eagle* 80. The former focused on the requirements and challenges of the complex transition from peace to wartime in NATO's Central Region and the

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[105] 'Gen. Schulze new CINCENT', *Armies & Weapons*, no. 34 (April–May 1977): 23.

[106] *Histories of Headquarters, Allied Forces Central Europe 1977 and 1978*, 37.

[107] *Histories of Headquarters, Allied Forces Central Europe 1977 and 1978*, 40.

latter on the conduct of the 'covering force battle' and main defensive operations and on the employment of reinforcements.[108]

One level of command down from Schulze, Blanchard gave multi-nationality and interoperability an unprecedented impulse under a programme called 'Rationalisation, Standardisation and Interoperability' (RSI)[109]. Working successively with Generals William DePuy and Starry at TRADOC, Blanchard resurrected effectively the operational level of command and operational art in CENTAG after a decade of neglect. The US Army adopted the 'active defence' as its tactical doctrine for corps-level operations and below, but embedded this transition in a wider, concerted approach with the *Bundeswehr*, bilaterally between the two armies and at the army group level within NATO.[110] CENTAG became the framework and test-bed for bringing the doctrines of the US Army and the *Bundeswehr* closer together.

A particular concern of the German Army had been that with two German army corps – the II and III *Korps* – positioned on CENTAG's right and left flanks, a failure of the two American army corps – the V and VII Corps located, side-by-side, in CENTAG's middle position – to fight forward might force German forces to abandon territory unnecessarily, to avoid creating dangerous gaps with adjacent American forces. As Haig remarked, 'in our Central Army Group we have made some changes in our corps and division concepts for defense to get a strong, forward, initial defense. It is not logical to have one corps defending with one concept and a corps alongside defending with a different concept.'[111] Accordingly, to ensure that a high level of operational coherence would be attained between adjacent American and German corps, in autumn 1979, for the first time, CENTAG sponsored a so-called 'inter-corps coordination exercise' in the form of a field training exercise in Hesse – *Constant Enforcer* – involving the coordinated employment, side-by-side, of the III (GE) Corps and the V (US) Corps.[112]

The US Army Europe war and reinforcement plans in support of CENTAG were revised extensively, on the basis of recommendations developed for the chief of staff of the US Army that called for planning to be based on 'preparation for an intensive early battle to stop any attack within 15 days . . . A forward defense concept should be

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[108] 'Central Fortress 79', *1979 Annual History*, 3300/ACCGSX/445/SO736/81, classified NATO Secret (Brunssum, The Netherlands: Headquarters, Allied Forces Central Europe), dated 1 July 1981, declassified and disclosed to the public on 23 May 2014, 50; and 'Crested Eagle 80', *1980 Annual History*, 3340/ACCGSX/258/SO0552/82, classified NATO Secret (Brunssum, the Netherlands: Headquarters, Allied Forces Central Europe), 28 April 1982, declassified and disclosed to the public on 23 May 2014, 46.

[109] General George S. Blanchard, 'CENTAG/USAREUR Interoperability - A Total Program: From the Bottom UP', *Strategic Review*, Winter 1977: 7–13; and Richard L. Kugler, *Commitment to Purpose: How Alliance Partnership Won the Cold War* (Santa Monica, CA: The Rand Corporation, 1993), 305.

[110] Major Paul H. Herbert, *Deciding What Has To Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, Leavenworth Papers, Number 16 (Kansas: Fort Leavenworth, July 1988), 61–73.

[111] G.M. Bailly-Cowell, 'Apprehension without Fear . . . : An Interview with General Alexander M. Haig, Jr, *NATO's Fifteen Nations* 21, no. 1 (February–March 1976): 26.

[112] *1979 Annual History*, Headquarters, Allied Forces Central Europe, 51.

adopted, with plans, organization, and assignments of sectors revised accordingly'.[113] Thereafter, General Defence Plans at all levels, from Army Group-level downward, reflected an unambiguous commitment to a strong forward defence and to 'winning the first battle' without trading space for time.[114] In the words of Major General Richard S. Kem, 'So, in fact, our general defense plan was being revised to reflect this doctrinal shift of fighting forward, [. . .] which meant, if we were going to fight forward, we had to move forward . . . We are no longer going to trade space for time.'[115] In his 1975 SHAPE study on flexibility, Haig reported that 'modifications of defence plans in CENTAG increased the number of US brigades deployed close to the border.'[116] In 1977, Schulze revised his General Defence Plan to ensure that the 'Covering Forces' – those closest to the Iron Curtain – would consist of a least a third of all available forces and all Central Region nations were requested to 'defend as far to the east as possible and not to trade space for time.'[117]

This revised approach was anchored on a careful identification of defensive terrain features, the widespread deployment with allied forces of helicopter-launched, vehicle-mounted and shoulder-fired antitank guided missiles, and the preparation of obstacles and pre-planned armour and artillery 'engagement zones'. Forward defensive positions were backed-up with brigade-size reserves. The US Army deployed to West Germany over 200 *Huey Cobra* attack helicopters armed with TOW antitank missiles.[118] General Kem highlighted that 'We were really redoing operating plans and redoing them in terms of not only forward defense concepts but down to the actual terrain.'[119] Upon taking command of the V (US) Corps in February 1976, Starry instituted the practice of detailed 'terrain walks' along the corps's forward defence positions, to ensure that his subordinate commanders were intimately familiar with the terrain they would have the responsibility to defend in wartime, as well as with the precepts of the army's new 'active defence' doctrine.[120]

By 1977, all Central Region allies, with the exceptions of Canada and France, had instituted the practice of conducting multi-national, corps-scale field training

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[113] 'The Hollingsworth Study', *1976 Annual Historical Review* (Heidelberg: Headquarters, US Army Europe and Seventh Army, 1 January–31 December 1976), classified Secret, downgraded to unclassified, 19 January 2012, 16–17.

[114] General Leopold Chalupa, NATO's CINCENT from 1983 to 1987, cited in Hoffenaar and Findlay, *Military Planning for European Theatre Conflict*, 58.

[115] Major General Richard S. Kem, *Engineer Memoirs* (Alexandria, VA: Headquarters, US Army Corps of Engineers, October 2002), 193–196. In 1976–1978, General Kem was commander of the 7th Engineer Brigade, subordinated to the VII (US) Corps stationed opposite Czechoslovakia.

[116] *Study on Flexibility of NATO Forces in the Central Region (U)*, III-8.

[117] *History of Headquarters Allied Forces Central Europe 1977 and 1978*, 15.

[118] 'I Can Move Damned Fast, Maybe Even Fast Enough for NATO to Stop a Soviet Blitz', *Time*, 11 December 1978, 40.

[119] Kem, *Engineer Memoirs*, 193.

[120] Major Aaron J. Kaufman, *Continuity and Evolution: General Donn A. Starry and Doctrinal Change in the U.S. Army, 1974–1982* (Fort Leavenworth, KS: School of Advanced Military Studies, United States army Command and General Staff College), 8 May 2012, 51.

exercises periodically, as part of *Autumn Forge*, to enhance interoperability and the ability of allied forces of various nationalities to fight together. In the NORTHAG area, the United Kingdom executed exercise *Spearpoint* in 1976, Belgium carried out exercise *Blue Fox* in 1977 and the Netherlands exercise *Saxon Drive* in 1978. The US Army's own corps-level exercises in West Germany – 'REturn of FORces to GERmany' or REFORGER – initiated in 1969 took on a new dimension. In autumn 1975, the REFORGER exercise was extended for the first time to the NORTHAG area, with US Army and, exceptionally, Marine Corps forces participating in a West German exercise.[121] Two years later, exercise REFORGER 77/*Carbon Edge* in the CENTAG area involved, for the first time together, the land forces of all of the Central Region allies.[122] General Kem observed that 'REFORGER 77, (which) turned out to be a most significant exercise and one that was the culmination of a lot of planning'.[123]

Schulze also helped ensure closer involvement of the French Army in NATO contingency planning, under the terms of the December 1978 Biard-Schulze agreement with the commander of the First French Army, which built upon the Valentin-Ferber agreement of July 1974 between their two predecessors.[124] Contingency plans were developed to cover the employment of the First French Army as a two-corps-strong, counter-attack force along two eastward-oriented operational directions, either in the direction of Fulda, to protect the approaches towards Frankfurt and the Rhine River, or in the direction of Munich, to stop a Soviet advance in the Danube valley towards Stuttgart.[125] These were two of the principal operational directions, it was believed, that the Warsaw Pact would focus on in an attempt to encircle CENTAG's American and German forces. The expanding scope of AFCENT's confidential agreements with France would have meant that, paradoxically, a French contribution to West Germany's defence in the late 1970s would have been larger in volume, and more useful operationally, than that in the mid-1960s, when France was still part of NATO's integrated military structure, but was weaker militarily.[126] Following a French-sponsored commanders' seminar – *Kellerman* 79 – held at the headquarters of the First French Army in Strasbourg in December 1979, the AFCENT staff observed that the seminar 'was the first time since

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[121] *Study on Flexibility of NATO Forces in the Central Region (U)*, VII-5.

[122] Master Sergeant Dick Larsen, 'REFORGER 77: mobility systems tested as part of Autumn Forge', *NATO's Fifteen Nations* 23, no. 1 (February–March 1978): 66–72; and Diego A. Ruiz Palmer and Wolfgang Igert, Fahrzeug Profile no. 61, *REFORGER 77/Carbon Edge: Die multinationalste REFORGER-ubung der siebziger Jahre* (Stengelheim, Germany: UNITEC – Medienvertrieb, 2014).

[123] Kem, *Engineer Memoirs*, 201.

[124] *History of Headquarters Allied Forces Central Europe 1977 and 1978*, 16; and Frederic Bozo, *La France et l'OTAN: De la guerre froide au nouvel ordre européen* (Paris: Institut Français des Relations Internationales, 1991), 118.

[125] These contingency plans were given colourful nick-names, such as *Classic Fanfare* and *Charming Gorilla*. Christian E.O. Millotat, 'Streitkrafteentwicklung, Ruckblick und Ringen um neue Wege - Ausblick', *Military Power Revue der Schweizer Armee* no. 1 (2013): 45.

[126] Diego A. Ruiz Palmer, 'Between the Rhine and the Elbe: France and the Conventional Defense of Central Europe', *Comparative Strategy* 6, no. 4: 471–512.

France's departure from NATO's integrated military structure that the 1st (FR) Army had exercised so thoroughly in a NATO environment.'[127]

In parallel, at the initiative of General David C. Jones, commander-in-chief of the United States Air Forces in Europe (USAFE) between 1971 and 1974, the US Air Force was leading a resurrection of airpower at the operational level in NATO with the re-establishment of Allied Air Forces, Central Europe (AAFCE) in June 1974, as a region-wide air command under CINCENT.[128] Jones' ambition, and that of his successor, General John W. Vogt, was to have AAFCE lead a region-wide air campaign aimed at confronting a Soviet theatre-scale air operation and, simultaneously, interdicting the forward movement of Warsaw Pact land forces.[129] 'With the creation of AAFCE, NATO (also) introduced a new theatre perspective on the use of airpower.'[130]

The standing-up of AAFCE was accompanied by a vast array of other *organisational* measures, including:

(i) The activation of a state-of-the-art, US Air Force-manned Tactical Fusion Centre, inside the *Erwin* bunker, to provide CINCENT round-the-clock with NATO-releasable US intelligence information on the readiness and disposition of Warsaw Pact forces stationed opposite the Central Region;[131]

(ii) The gradual development of an AFCENT-wide intelligence architecture, built around a first-generation network of US servers deployed in Europe under the innocuous name of 'Limited Operational Capability – Europe' (LOCE)[132] designed to make intelligence information on the Warsaw Pact available more widely;

(iii) The extension of the area of operational coverage of the United States Air Force, and its associated tactical air control system,[133] from its traditional zone in West Germany's southern half, corresponding to NATO's 4th Allied Tactical Air Force

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[127] *1979 Annual History*, the Netherlands: Headquarters, Allied Forces Central Europe, 35.

[128] A NATO region-wide air command for Central Europe – AIRCENT – had last been in existence at Fontainebleau until November 1966, when it was disbanded, following the withdrawal of France from NATO's integrated military structure four months earlier, to meet headquarters efficiency requirements.

[129] General John W. Vogt, Jr., 'A Look at a New Command in the Central Region', *NATO's Fifteen Nations* 19, no. 6 (December 1974–January 1975): 57–64; and Yves Robins, 'One Year of Allied Air Forces Central Europe', an interview with General John W. Vogt, *Aviation & Marine International*, no. 27, (November 1975): 15–17.

[130] David J. Stein, *The Development of NATO Air Tactical Doctrine, 1970–1985* (Santa Monica, CA: The Rand Corporation), Project AIR FORCE, report R-3385-AF, December 1987. 24.

[131] Dan Boyle, 'C3 – the Essential Ingredient to Air Defense', *International Defense Review*, 6 (1978): 862; and Thomas C. Housman and Raymond Fuentez, *Knowledge-Based Multi-Level Secure Network Technology*, Air Force Rome Laboratory (New York: Griffiss Air Force Base, December 1993), 5–6.

[132] As LOCE matured technologically, it was renamed 'Linked Operations Intelligence Centers-Europe', before becoming the NATO Battlefield Intelligence Collection and Exploitation System (BICES).

[133] *Tactical Air Control System* (Ramstein air base, Germany: United States Air Forces in Europe, March 1980); and 'The Command Expanded the Tactical Air Control System into Northern Germany', Thomas S. Snyder and Shekia A. Shaw, *Profiles in Leadership* (Ramstein air base, Germany: Headquarters, United States Air Forces in Europe, 28 January 1992) 186.

(ATAF), to the Central Region as a whole, to match the establishment of AAFCE. Concurrently, USAFE stood up a NATO Operations Support Cell at the 2nd ATAF bunker in Kalkar, in West Germany's northern half, to facilitate the provision, for the first time, of offensive air support to the Belgian and British land forces located in the more exposed and vulnerable NORTHAG area, notably by US Air Force combat aircraft stationed in the United Kingdom;[134]

(iv) The commitment to NATO for the first time of nearly all Royal Air Force reconnaissance, fighter, tanker and transport assets stationed in Britain, through the establishment in April 1975 of a dedicated NATO air command – United Kingdom Air Forces (UKAIR) – under Haig's authority.[135]

Successive AAFCE commanders, starting with Vogt, also worked closely with their French Air Force counterparts to facilitate a French contribution to a NATO air campaign, should France decide to participate early on in the combined defence of West Germany in a war against the Warsaw Pact. Accordingly, confidential protocols were agreed upon in July 1975 and August 1976 that regulated the planning and execution of French conventional air sorties, as well as, in December 1980, the use of French airspace by the allies.[136]

All of these steps aimed at ensuring that NATO's air forces would make a strong contribution to winning the 'first battle', as part of a joint land/air campaign and at a time when NATO's ground forces had few interdiction capabilities, notably by ensuring the allocation of sufficient surveillance, air-delivered firepower and electronic warfare means to the battlefield interdiction effort against the lead armies of the Warsaw Pact's first strategic echelon. To that end, Schulze issued 'War Planning Directive No. 1 – *Battlefield Interdiction Programme*' in early 1977.[137] Over the following two years, implementation of this directive led to the identification of the most suitable target areas, within a 20 kilometre-wide band on both sides of the FRG's borders with East Germany and Czechoslovakia, for the battlefield interdiction by NATO of advancing Warsaw Pact forces.[138]

These innovative organisational steps were underpinned by the concurrent development of new NATO tactics, techniques and procedures that favoured the employment of large 'packages' of fighter, fighter-bomber and electronic suppression aircraft over the earlier, piecemeal commitment of small numbers of aircraft sorties.[139]

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[134] 'USAFE units in Northern FRG', *Aviation & Marine International*, no. 45, June 1977, 21.

[135] 'Commander UK Air Forces appointed', *Flight International*, 17 April 1975, 637; Yves Robins, 'CINCUKAIR: A New NATO Command', *Aviation & Marine International*, no. 26, October 1975, 15–17; and David Miller, *The Cold War: A Military History* (London: John Murray Publishers, 1998), 296–298.

[136] Diego A. Ruiz Palmer, 'French Security Policy', in Simon, *European Security Policy*, 232.

[137] *History of Headquarters Allied Forces Central Europe 1977 and 1978*, 18.

[138] 1979 Annual History (Brunssum, the Netherlands: Headquarters, Allied Forces Central Europe), 38–39.

[139] For a description and assessment of the various national impulses that triggered conceptual innovation in regard to the employment of airpower in NATO in the 1970s, see David J. Stein, The Development of NATO Tactical Air Doctrine, 1970–1985, 10–12.

The greater effectiveness and efficiency of employing limited assets in larger-scale, targeted air operations had been one of the major lessons learned by the US Air Force during the war in southeast Asia. This new *conceptual* approach to the employment of airpower culminated in the mid-1980s in the rise of 'composite air operations', involving 50–100 aircraft and designed to overwhelm the Warsaw Pact's dense air defences and inflict large-scale damage on its land forces and ground infrastructure. The concept of a comprehensive 'air campaign' that guided the employment of coalition air forces during the 1991 Gulf War had been born.

Executing a broader, more ambitious joint, land and air battle also required better training. Building on the initial lessons learned from the US Air Force's *Red Flag* live flying exercises in the Nevada desert, in 1976 USAFE stood-up at RAF Alconbury air base, in the United Kingdom, an 'aggressor' squadron trained in Soviet air tactics and tasked to challenge USAF and other allied fighter pilots during 'force-on-force' flying exercises.[140] Without a stronger theoretical grounding in the application of airpower at the operational level, however, better flying skills alone were not sufficient. Accordingly, in 1979, AAFCE established a tactical leadership programme at Jever air base, in Germany, to train allied fighter pilots in the planning and execution of complex air missions in an adverse wartime environment.[141] Periodically, the operational aptitude of allied air forces was put to the test during increasingly ambitious large-scale, live flying exercises, such as *Central Enterprise* for air defence and *Cold Fire* for ground support, in the spring and the autumn, respectively, the latter integrated into *Autumn Forge*.

The establishment of AAFCE in 1974 and the various subsequent steps prepared the ground for the stationing in the United Kingdom, in 1977, of a second wing of F-111 long-range fighter bombers, more than doubling the US Air Force air interdiction potential in Europe and its capacity to attack Warsaw Pact forces and sites deeply into Eastern Europe in a conflict, several years *before* the concept of Follow-On Forces Attack (FOFA) emerged. They also anticipated the arrival in Europe, starting in 1976, of a new generation of USAF specialised combat aircraft, in the form of the F-15, F-16 and A-10 fighters, to replace the multi-role, but aging F-4 *Phantom*.

The gradual availability of expanding numbers of combat aircraft with much greater range and payload, including the *Tornado* in the *Luftwaffe* and the Royal Air Force in Germany, revolutionised the application of airpower in NATO. It also increased considerably the requirement for reliable, near-real-time targeting information from photographic, radar and signals intelligence sensors, as well as for physical attack and electronic suppression against the Warsaw Pact's dense air defences. In response, the

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[140] Yves Robins, 'USAFE gets an Aggressor Squadron', *Aviation & Marine International*, no. 40 (January 1977): 16–17, and Lindsay Peacock, 'Aggressors at Bentwaters', *United States Air Forces in Europe – Yearbook 1989*, 31–35.

[141] 'Tactical Leadership Programme', *1979 Annual History*, Headquarters, Allied Forces Central Europe, 36; and 'Allied Air Forces Central Europe (AIRCENT) Tactical Leadership Programme (TLP)', *NATO's Sixteen Nations* 40, no. 2/95 (Spring 1995): 22.

USAF deployed successively to European bases, EB-57 and F-105G in the mid-1970s[142] and, from 1979 onwards, the U-2R, SR-71, TR-1, EC-130, EF-111 and F-4G specialised reconnaissance, signals intelligence, electronic jamming and anti-radar attack aircraft.[143]

By the late 1970s, then, the completion of a specialised command and control ground infrastructure around *Erwin* and a network of other bunkers, as well as the growing emphasis in NATO's war planning and exercises on the conduct of a theatre-scale, joint land and air campaign, had created the necessary conditions for the resurrection of the operational level in the Alliance and a growing awareness of the importance of operational art. Haig and Schulze's transformational vision was being realised. In a conflict, the Warsaw Pact would confront a much more capable and prepared adversary than would have been the case just half-a-decade earlier.

Senior Soviet and other Warsaw Pact commanders were aware of this trend – which portended, if left unchecked, an adverse shift in the 'correlation of forces' against the Warsaw Pact – from their clandestine sources, such as East Germany's agent *Topaz* inside NATO Headquarters in Brussels and the Clyde Conrad spy ring run by Hungary's intelligence service against the US Army in West Germany, as well as from their signals intelligence collection activities.[144] Articles in military journals such as *Zarubezhnoe voennoe obozrenie* reflected growing Soviet acknowledgement of, and alarm at, the scale and momentum of NATO conventional force improvement, perhaps best exemplified in the annual *Autumn Forge* exercise series.[145]

The first phase of NATO's RMA in the second half of the 1970s planted the seeds for the next step in NATO's Cold War RMA. This second step involved the development, between 1980 and 1986, of operational scale concepts for: (i) the mass employment of

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[142] A Polish General Staff document setting out the scenario for a war game in 1978 mentions specifically the RB-57 and F-105G aircraft deployed temporarily to Europe, in support of NATO's *Autumn Forge* exercises. *War Game Scenario – Central Europe – 1978*, 6.

[143] T. Malcolm English, 'Jamming Swingers' and Bob Archer, 'Reconnaissance in Europe', *United States Air Forces in Europe – Yearbook 1989*, 46–50 and 66–67; and T. Malcolm English, 'Alconbury's High Fliers', *United States Air Forces in Europe – Yearbook 1990*, 40–44.

[144] Bernd Schaefer, *The Warsaw Pact's Intelligence on NATO: East German Military Espionage Against the West*, Parallel History Project on NATO and the Warsaw Pact, November 2003. On Rainer Rupp, alias *Topaz*, see Markus Wolf with Anne McElvoy, *Memoirs of a Spymaster: The Man who Waged a Secret War Against the West* (London: Pimlico, 1998) 299–333. On the Hungarian intelligence penetration of the US Army in West Germany, see Colonel Stuart A. Herrington, *Traitors Among Us* (Orlando, FL: Harcourt, Inc., 1999); and on East Germany's signals intelligence operations, see Benjamin B. Fischer, 'One of the Biggest Ears in the World: East German SIGINT operations', *International Journal of Intelligence and Counter-Intelligence* 11, no. 2, 142–153.

[145] See, for example, Lt. Col. V. Stroganov, Lt. Col. V. Kulikov, 'Exercises AUTUMN FORGE-85',, USSR Report, Military Affairs, *Foreign Military Review*, no 5, May 1986, JPRS-UMA-86-065 (Washington, D.C.: Foreign Broadcast Information Service), 18 November 1986, 7–15. The scale of the Warsaw Pact's monitoring and awareness of NATO's military strategy, deployments and exercises was also revealed in a 1988 propagandistic publication of the German Democratic Republic's Ministry of Defence: *Militardoktrin der NATO und Ihrer Mitgliedstaaten* (Berlin, GDR: Militarverlag der Deutschen Demokratischen Republik, 1988).

helicopters to destroy Warsaw Pact armour;[146] (ii) the engagement of armoured and mechanised forces in manoeuvre warfare and the execution of a daring army group-level 'counter-stroke' operation; and (iii) the targeting and disruption of the forward movement of Warsaw Pact follow-on forces, through exploitation of 'emerging technologies' for 'deep attack.'

The bold vision of helicopters being engaged *en masse* to arrest the progression of fast-moving OMGs that would be opening the way to the completion of operational-strategic encirclement operations originated with General Ferdinand von Senger und Etterlin, Schulze's successor as CINCENT, and Lieutenant-General Charles Georges Fricaud-Chagnaud, head of the French Defence Staff's liaison team to CINCENT.[147] Their thinking was inspired by the unprecedented, but moderately successful, involvement of the combat and transport helicopters of the US Army's 101st Airborne Division (Air Assault) in the REFORGER 76 exercise in Germany,[148] as well as by persistent US Army interest in air mobility associated with the creation of an experimental air cavalry brigade in Texas.[149] The introduction of a new generation of anti-tank helicopters in the French and German armies also offered a new opportunity to explore new, innovative forms of manoeuvre warfare at the operational level.[150]

Their ideas led eventually to the creation of self-contained airmobile formations, in the form of the French Army's 4th Airmobile Division, as a component of its new *Force d'Action Rapide* (FAR), and of NATO's NORTHAG Airmobile Division, composed of helicopters contributed by Belgium, Germany, the Netherlands and the United Kingdom.[151] Although the expected congestion of Central Europe's airspace in a conflict meant that the scope for employing helicopters on a large scale would necessarily be limited and probably could not match von Senger's ambitious vision of 'air-mechanised divisions', the German Army's exercise *Kecker Spatz* in Bavaria in the

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[146] Richard Simpkin, *Antitank: an Airmechanised Response to Armoured Threats in the 1990s* (Oxford: Brassey's, 1982).

[147] Diego A. Ruiz Palmer, 'Countering Soviet encirclement operations: emerging NATO concepts', *International Defense Review*, November 1988: 1413–1418.

[148] Yves Robins, 'REFORGER 76: The 101st Is Coming', *Aviation & Marine International*, no. 37 (October 1976): 15–18; and Massimo Ferrari, 'REFORGER 76: The Screaming Eagles Descend', *Armies & Weapons*, no. 29 (November–December 1976): 2.

[149] The US Army's first operational application of air-mobility was during the Vietnam War. Mark D. Sherry, 'Airmobility', in *A History of Innovation: U.S. Army Adaptation in War and Peace*, ed. Jon T. Hoffman (Washington, D.C.: Center of Military History, 2009), 117–126.

[150] General Ferdinand von Senger und Etterlin, 'New Operational Dimensions', *RUSI Journal*, June 1983: 11–15; General Ferdinand von Senger und Etterlin, 'The Airmobile Division: Operational Reserves for NATO', *RUSI Journal*, March 1987: 23–30; and General Charles Georges Fricaud-Chagnaud, 'L'Armee de Terre face a ses missions en Europe', *Defense Nationale*, May 1983: 35–44. A 1977 Polish General Staff document outlining the scenario of a war game that was played in February 1978 made specific reference to the deployment with NATO forces of helicopters armed with TOW and HOT antitank guided missiles. *War Game Scenario – Central Europe – 1978*, 7.

[151] General Sir Nigel Bagnall, 'Airmobile Operations in Northern Army Group', *NATO's Sixteen Nations* 32, no. 6 (October 1988): 75–79.

autumn of 1987, involving the forward engagement of the FAR, demonstrated vividly the conceptual prescience of their thinking.[152]

Manoeuvre warfare at the operational level was the focus of the US and British armies in CENTAG and NORTHAG, respectively, in the mid-1980s. In CENTAG, where terrain in the 'covering force battle' area favoured, in most places, the defence, the transition from the 'active defence' to the 1982 version of the US Army's Air Land Battle doctrine opened the way to a more mobile form of forward defence.[153] AirLand Battle tactics sought to capitalise on the greater tactical mobility, firepower and survivability of the new generation of armoured vehicles and attack helicopters – the M-1 tank and the M-2 infantry fighting vehicle and the AH-64 helicopter – to engage advancing Warsaw Pact forces at a greater range and on the flanks of their penetrations through manoeuvre and deep fires.[154] Exercise REFORGER 88 in Bavaria, involving the employment of the V and VII (US) Corps on opposite sides, marked the most evolved form of the US Army's implementation of AirLand Battle in the European theatre and can rightly be seen as a live rehearsal, three years ahead of time, of the ground offensive in Operation *Desert Storm*.

In NORTHAG, British Generals Nigel Bagnall and Martin Farndale, successive commanders of the 1st British Corps and of NORTHAG, directed their attention to thwarting a Soviet and East German advance into the easily accessible North German Plain by bringing together a British and two West German armoured divisions into a corps-size, army group reserve. Their planning envisaged that either this reserve force or the III (US) Corps from Texas, if redeployed to Europe and available for employment sufficiently promptly, would be engaged in an operational-scale 'counter-stroke' to break the momentum of a Soviet offensive.[155] Remarkably, the very year that Marshal Kulikov directed the *Soyuz* 83 command post exercise, which, as highlighted above, included the simulated employment of a three-division-strong OMG to break NORTHAG apart, General Bagnall directed a 1st British Corps command post exercise – *Winter Sales* 83 – to rehearse the concept of a counter-stroke to break a Warsaw Pact offensive apart.[156] Thereafter, reinforcement exercises *Lionheart* 84 and REFORGER 87 and their field training exercise phase – the 1st British Corps exercise *Spearpoint* in 1984 and the III (US) Corps exercise *Certain Strike* in 1987 – were staged

[152] Walter Bohm and Diego Ruiz Palmer, *Kecker Spatz: Panzerschlacht in Suddeutscland* (Erlangen: Verlag Jochen Vollert, 2012).

[153] It is worth noting that, despite the often heralded opposition between AirLand Battle and NATO's forward defence strategy, General Crosbie Saint, commander of CENTAG in the late 1980s, highlights the importance of forward defence and the first battle. General Crosbie E. Saint, 'A CINC's view of Operational Art', *Military Review*, September 1990: 65–78.

[154] Colonel Charles Barry, 'Planning Aviation Cross-FLOT Operations', *Military Review*, January 1984: 34–45; and General Crosbie E. Saint, 'Attack Helicopter Operations in the AirLand Battle: Deep Operations', *Military Review*, July 1988: 2–9.

[155] General Sir Nigel Bagnall, 'Concepts of Land/Air operations in the Central region: I', *RUSI Journal*, September 1984: 59–62; 'New Defence Concept for NORTHAG', *Jane's Defence Weekly*, May 24, 1986: 920; General Sir Martin Farndale, 'Counter-Stroke: Future Requirements', *RUSI Journal*, December 1985: 6–9.

[156] Sangho Lee, *Deterrence and the Defence of Central Europe*, 34–35.

to test in the field NORTHAG's capacity to plan and execute the envisaged counter-stroke, without the American reinforcements in 1984 and with the nearly full US Army corps redeployed to West Germany in 1987.

With strengthened forward defences in place and powerful, if limited, operational reserves to back them up gradually becoming available, the remaining component of the three-part NATO shield – follow-on forces attack (FOFA) – gradually came into place in the early to mid-1980s, following the completion in 1980 of a 'Warsaw Pact Second Echelon Interdiction Study' initiated by General Bernard Rogers, Haig's successor as SACEUR from mid-1979 onwards.[157] Beyond airpower, a key enabler for FOFA was the new US Multiple Launch Rocket System, designed to fire artillery rounds, anti-armour munitions and conventional attack surface-to-surface missiles against forward-moving Warsaw Pact formations.[158] Interdiction was evolving into deep attack.

When looking back at the concepts imagined by the likes of Ogarkov, Gareev, von Senger und Etterlin and Bagnall, the boldness of their strategic vision and the scale of the endeavor involved in the Warsaw Pact and NATO RMAs of the mid-1970s to the mid-1980s become readily apparent and awe–inspiring. From the standpoint of military innovation, this was, truly, a revolutionary decade. Appreciating the full dimension of the two alliances' Cold War RMAs, however, will likely have to await that time when the most authoritative strategic planning documents – the three-volume Soviet *Strategy for Deep Operations – Theatre and Global*[159] and SACEUR's and CINCENT's General Defence Plans of the 1970s and 1980s[160] – become available for another generation of Cold War historians to examine.

The NATO and Warsaw Pact RMAs and the historiography of the Cold War

For both NATO and the Warsaw Pact, the 1961 Berlin Crisis had made the prospect of war in Europe tangible, in a physical and visible way, for the first time. In October 1961, Soviet and US Army tanks faced each other, a few hundred metres apart, at Checkpoint Charlie in the centre of Berlin. The lessons that both alliances drew from the crisis had largely over-lapping implications, most notably regarding the conventional-nuclear interface. They triggered sustained interest in the feasibility of

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[157] *1980 Annual History*, the Netherlands: Headquarters, Allied Forces Central Europe, 44.

[158] General Bernard Rogers, 'Follow-On Forces Attack: Myths and Realities', *NATO Review*, December 1984: 1–9.

[159] Barrass, *The Great Cold War*, 213.

[160] The CINCENT General Defence Plan, revised and updated in 1987 under the authority of General Hans-Henning von Sandrart, who was CINCENT between 1987 and 1991, seems to have been the culmination of the effort initiated a decade earlier by General Franz-Joseph Schulze to embrace the operational level of war for the conduct of a theatre-scale land-air campaign in the Central Region. See Sangho Lee, *Deterrence and the Defence of Central Europe*, 281–283, and Guy Willis and Charles Dick, 'Beyond the Corps Battle in NATO's Central region – An Interview with General Hans-Henning von Sandrart', *International Defense Review* 22, no. 2 (February 1989): 169–170.

Warsaw Pact	NATO

A. Vision of future war in Europe

- Contemporary version of 'deep operations' against a capable and prepared adversary, under the threat of nuclear use
- Conventional/nuclear campaign to execute a 'forward defence' against a numerically superior adversary enjoying the strategic initiative

B. Conceptual innovation

- Theatre-Strategic Operation concept
- Operational-strategic-scale encirclement operations
- Air and anti-air operations

- Land-Air campaign concept
- Counter-offensive operational concepts (e.g., NORTHAG 'counter-stroke')
- Follow-on Forces Attack concept
- Composite air operations

C. Organisational adaptation

- TVD-level high commands
- Operational Manoeuvre Groups
- 'Reconnaissance-Strike Complexes'

- Army Group and theatre-level, corps-size operational reserves
- Division-size air-mobile reserves

D. Technological development

- Main battle tanks and infantry fighting vehicles with river-fording capability
- Main battle tanks with 'explosive reactive armour'
- Self-propelled field artillery
- Longer-range multiple rocket launchers
- Self-propelled surface-to-air missiles
- River-crossing equipment
- Armoured combat helicopters
- Long-range fighter-bombers and escort fighters

- New generation of main battle tanks, anti-tank guided missiles, self-propelled field artillery and attack helicopters with enhanced capability against Warsaw Pact tanks
- New generation of surveillance, target-acquisition and munition-delivery systems for 'deep attack'

Figure 1 Constituent parts of the Cold War RMA of the late 1970s and early 1980s

conducting conventional operations successfully (offensively for the Warsaw Pact, defensively for NATO), while preserving the latent option of being able to resort to the first use of nuclear weapons.

As postulated at the beginning of this article, by the late 1970s, the Cold War RMA was underway in both alliances and largely on the way to completion. It was fully embedded in Warsaw Pact force posture, war planning and ongoing weapons deployments opposite NATO, ahead of its *public* theorisation by Ogarkov and other Soviet writers. In both alliances, conceptual innovation and organisational transformation often ran ahead, and anticipated, the fielding of new technologies.

And, lastly, contrary to a widely-held view, the operational level of war, as well as operational art, were alive in NATO throughout most of the Cold War and witnessed a revival from the mid-1970s onwards (Figure 1).

However, a preference, as well as ever-improving concepts and capabilities for conventional operations, on both sides never removed, reliably, the risk that either of the opponents might be forced to have recourse to the first use of nuclear weapons, even when the attractiveness of such employment, with its high escalatory potential, was debatable operationally and politically, and its consequences on the course and outcome of the conflict unpredictable.

For the Warsaw Pact, nuclear use would have meant executing an improbable, nuclear 'meeting engagement', upon receipt of a reliable warning that NATO was about to escalate to the employment of nuclear weapons. Accordingly, the detection of an imminent NATO transition to nuclear use in the course of a general war in Europe was assigned the highest priority.[161] However, whether the Soviet Union had the technological capability to detect reliably, in the middle of a high-intensity conflict and into the depth of a theatre of operations, the preparatory steps for NATO's nuclear first use, as well as the communications means to alert promptly its own nuclear forces in order to execute the foreseen 'meeting engagement', remains unknown.[162]

Various patterns of behaviour suggest that, through the mid-1980s, the Soviet Union struggled to develop a compelling operational strategy that would have at once delivered conventional victory, while keeping the NATO nuclear threat at bay. These patterns include most prominently the enduring nuclear escalation dimension of Warsaw Pact exercises that ostensibly rehearsed a conventional theatre-strategic operation, as well as the high level of genuine, if misplaced, apprehension exhibited in the initiation and continuation of Operation *RYaN*, notably in connection with SHAPE's exercise *Able Archer* 83 and the stationing in the FRG of *Pershing* II surface-to-surface missiles.[163]

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[161] Hoffenaar, 'East German Military Intelligence', 86–87 and footnote 50.

[162] The relatively crude nature of human surveillance and intelligence collection operations undertaken as part of Operation *RYaN* suggests that the USSR might not have had a technically reliable capability to detect NATO preparations for nuclear first use at the sub-strategic level, or might not have had the level of confidence in that capability necessary to initiate promptly and execute successfully the envisaged nuclear 'meeting engagement'. Christopher Andrew and Oleg Gordievski, *Instructions from the Centre: Top Secret Files on KGB Foreign Operations, 1975–1985* (London: Hodder and Stoughton, 1993), 111–140. Soviet strategic ground and spaced-based early warning systems had a history of defective performance. See Pavel Podvig, 'History and Current Status of the Russian Early Warning System', *Science and Global Security*, 10, no. 1 (2002): 21–60.

[163] Andrew and Gordievski, *Instructions from the Centre*, 119–120 and 134–137; William T. Lee, 'The Nuclear Brink that Wasn't – and the One that Was', *The Washington Times*, 7 February 1995; Gates, *From the Shadows*, 273; Benjamin Fischer, 'The Soviet American War Scare of the 1980s', *International Journal of Intelligence and Counterintelligence* 19 (2006): 480–518; Vojtech Mastny, 'How Able Was Able Archer?', *Journal of Cold War Studies* 11, no. 1 (Winter 2009): 108–23; Arrnav Manchanda, 'When Truth is Stranger than Fiction: The Able Archer Incident', *Cold War History*, 9, no. 1 (February 2009): 111–33; Dima Adamsky, 'The 1983 Nuclear Crisis – Lessons for Deterrence Theory and Practice', *The Journal of Strategic Studies* 36, no. 1: 4–41; Paul Dibb, *The Nuclear War Scare of 1983: How Serious Was it?* (Canberra, Australia: Australian Strategic Policy Institute, October 2013); and Nate Jones, 'Countdown to Declassification: Finding Answers to a 1983 Nuclear War Scare', *Bulletin of the Atomic Scientists*,

Such tension was inherent to an operational strategy that, in a war in Europe, aimed at preventing a nuclear first use by NATO by achieving early and irreversible conventional success on the battlefield, but that could well have triggered the very large-scale nuclear employment it feared. The TSO, which encapsulated the Warsaw Pact's Cold War RMA, had reached a dead-end.

For NATO, preserving the deterrent effect of the option of first nuclear use in Europe, from peacetime through general war, including for the purposes of intra-war deterrence at the European theatre level, meant securing political endorsement of the battlefield circumstances that would prompt SACEUR to request nuclear release authority. General Rogers defined publicly those conditions as 'the loss of the cohesion of NATO's conventional defenses'.[164] That definition became the operational basis for agreement by the Nuclear Planning Group in 1986 of the 'General Political Guidelines' (GPG) that replaced the 1969 'Provisional Political Guidelines'.

The GPG infused NATO's nuclear planning with a degree of operational substance and predictability that contrasted with the ambiguity set out in West Germany's 1975–1976 White Paper on security and defence, which famously included the statement that '[t]he initial tactical use of nuclear weapons must be timed as late as possible but as early as necessary'.[165] It is highly probable that the combination of a large and capable NATO tactical nuclear capability and a seemingly very ambiguous employment doctrine had a powerful deterrent impact on the Soviet leadership and introduced considerable uncertainty into Soviet contingency planning for war in Europe. This remarkable combination prompted a drive by the Soviets to match every aspect of NATO's nuclear capability, including dual-capable field artillery, as well as a concept of operations that sought to degrade that capability conventionally, while keeping a capacity for, in effect, last-minute nuclear preemption.[166]

The West German White Paper's calculated ambiguity, however, could not disguise the uncertainty that such a formulation presented, not only to the potential adversary,

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Footnote 163 continued

1 November 2013: 47–57. On Soviet perceptions of the threat represented by the *Pershing* 2 missiles, see Hoffenaar and Findlay, *Military Planning for European Theatre Conflict*, 28 and 62.

164 'An Exclusive AFJ Interview with General Bernard W. Rogers', *Armed Forces Journal International*, September 1983: 80; and Bob Furlong and Macha Levinson, 'SACEUR Calls for Research on a European ABM System', *International Defense Review* 2 (1986): 151. In the same interview, General Rogers also called attention to the Soviet offensive chemical weapon threat.

165 *The Security of the Federal Republic of Germany and the Development of the Federal Armed Forces*, White Paper 1975/1976 (Bonn: Press and Information Office of the Government of the Federal Repiblic of Germany, 20 January 1976), 20.

166 In the same way that it took some time for NATO's intelligence and maritime communities to acknowledge that the Soviet Navy's primary missions in a war with NATO were to protect ballistic missile submarine 'bastions' near Soviet territory and to support land operations from the sea, rather than to conduct an extended campaign against NATO's sea lines of communication across the Atlantic, it has also taken some time for a consensus to emerge that persistent 'nuclear play' in Soviet and Warsaw Pact operational-strategic level exercises into the 1980s represented preparations to preempt, if necessary, a nuclear first use by NATO and to conduct ensuing operations on a nuclear battlefield, instead of a presumed preference for initiating deliberately wide-scale nuclear employment.

but to NATO political decision-makers as well. Rogers's threshold sought to balance ambiguity and uncertainty more finely by giving advance notice to his political masters of the adverse battlefield conditions that, hypothetically, would precipitate a request for nuclear use. The wish by Alliance member nations to avoid such circumstances in a hypothetical conflict was also used by Rogers as an incentive to enrol their support for greater conventional force improvements.

Embedded in the 1986 GPG agreement, however, was also an awareness that the outer boundaries of the conventional improvements that NATO's Cold War RMA could be expected to deliver had been reached.[167] As General Farndale, former commander of NORTHAG, acknowledged after the end of the Cold War, if NORTHAG had expended all of its operational reserves and still lost the battlefield contest with the Warsaw Pact, nuclear use would have been the only remaining option to attempt to avert defeat.[168] The exceptional June 1982 Soviet nuclear exercise and the US exercise *Proud Prophet* of June 1983 are reminders of the ever-present risk and temptation 'to go nuclear' that both alliances had to contend with if confronted, in a war, with an adverse strategic situation and the prospect of defeat.[169] In the end, the 'nuclear genie' managed to elude even the most ambitious prospects of what the Cold War RMA of the 1970s and 1980s could have been expected to deliver in terms of conventional capabilities.

With the end of the Cold War and the dismantling of the NATO-Warsaw Pact military competition, the Cold War RMA disappeared into a rapidly receding past.[170] It was disposed of by the emergence of a new strategic age. Few traces of it subsist in Europe, even if the name *Zapad* that is given periodically to large military exercises on Europe's eastern periphery evokes strangely a bygone era.[171]

However, Russia's enduring determination to restore its military potential, following NATO's air campaign in Kosovo in spring 1999 and, more recently, Russia's illegal annexation of the Crimean Peninsula and related military performance, bring a new context to the study of the Cold War RMA of the 1970s and 1980s that exceeds its contribution to Cold War historiography. While it is still too early to determine with confidence whether the sophisticated performance of the Russian armed forces in the

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[167] For a rare and compelling assessment of the nuclear-conventional interface, see Barry D. Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2013).

[168] Farndale, quoted in Lee, *Deterrence and the Defence of Central Europe*, 255 and 266.

[169] Mastny and Byrrne, *A Cardboard Castle*?, 55 and 462–465; Bruce G. Blair, *The Logic of Accidental Nuclear War* (Washington, D.C.: The Brookings Institution, 1993), 208; Ben B. Fischer, 'Intelligence and Disaster Avoidance: The Soviet War Scare and US-Soviet Relations', in *Mysteries of the Cold War*, ed. Stephen J. Cimbala (Brookfield, VT: Ashgate, 1999), 96; and Paul Bracken, *The Second Nuclear Age* (New York: Times Books, 2012), 81–89.

[170] On the fading of the Cold War, see Ian Gambles, 'Lost time: The Forgetting of the Cold War', *The National Interest*, Fall 1995: 26–35.

[171] The name *Zapad* 99 was given to a large live exercise undertaken by the Russian armed forces in western Russia in 1999, reportedly the largest since the collapse of the USSR in 1991. Jacob W. Kipp, 'Russia's Nonstrategic Nuclear Weapons', *Military Review*, May–June 2001: 30–32.

crisis in Ukraine earlier this year heralds the revival of the old Soviet RMA of the 1970s and 1980s in a revised, contemporary form, characterised notably by much lower levels of forces and without a coalition dimension, the emerging evidence is intriguing. Several military measures taken by Russia since its war with Georgia in 2008 seemingly reflect a deliberate execution of a well-thought-out construct that would correspond with the forward vision of RMA-inspired thinking:

 (i) The establishment in 2010 of four theatre-level high commands superimposed over four large military districts;
 (ii) The staging of large command and field training exercises on a regular basis, such as *Vostok* 2010 and *Zapad* 2013;
(iii) The holding of no-notice snap alert drills, such as the one executed in July 2013 in the Eastern Military District;
(iv) The procurement of new, state-of-the-art materiel, in the form of large weapons-systems, such as new generations of surface-to-air missiles, as well as advanced equipment for the infantryman.[172]

The skilful employment of soft power instruments, side-by-side with military means, also suggests the execution of a vision that is more sophisticated, and well-adapted to contemporary circumstances, than the Soviet MTR narrative of the 1970s and 1980s.

At the same time, the old and new forms of asymmetrical warfare that have emerged since the end of the Cold War, often categorised as 'fourth generation' warfare, have consigned broad swaths of the American RMA concept of the 1990s to the dustbin of history. The absence of a competitive and interactive relationship with a relatively symmetric, determined and methodical peer competitor, comparable to the USSR, over the last two decades, has largely emptied the RMA paradigm of its inspirational momentum. It has also raised the question of whether the RMA concept is transferable, reliably rather than readily, from the European theatre, where its deeper roots lie, to extra-European theatres, where adversaries might employ forms of warfare that are not easily susceptible to RMA-inspired interpretation and disruption.

Undoubtedly, new RMAs will emerge in the twenty-first century, more or less suddenly, reflecting evolving geopolitical alignments, economic circumstances and technological developments. They will likely be as unpredictable in regard to their operational and strategic consequences as many of their predecessors. Whether recent military developments in East Asia or on Russia's southwestern periphery could create, downstream, the conditions for the emergence of a new RMA warrants careful

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[172] On Russia's strategic trajectory since the end of the Cold War, see Marcel de Haas, *Russia's Military Reforms: Victory after Twenty Years of Failure?* Clingendael Paper No. 5 (The Hague: Netherlands Institute of International Relations, November 2011); Roger N. McDermott, *Russia's Conventional Military Weakness and Substrategic Nuclear Policy* (Fort Leavenworth, KS: Foreign Military Studies Office, 2011); Daivis Petraitis, 'The Russian Military Reform 2005–2015, *Lithuanian Annual Strategic Review* 9, no. 1 (January 2011): 139–171; and James T. Quinlivan and Olga Oliker, *Nuclear Deterrence in Europe* (Santa Monica, CA: The Rand Corporation, 2011).

observation and assessment. Indeed, the United States military position in the western Pacific in relation to a rising China is not without some parallel with the United States's military position in Western Europe vis-à-vis an increasingly threatening USSR in the mid-1970s, but the analogy stops there. In today's security environment, it is difficult to imagine the rise of a strategic competition that could be as dynamic and interactive as that between NATO and the Warsaw Pact in the last two decades of the Cold War and that could become so structured as to incubate a new RMA with global implications.

In retrospect, the scale of the planning for a general war in Europe during the later stages of the Cold War was staggering. Its nightmarish implications in terms of the devastation that would have been inflicted, if war had come, are all too clear. It is not too daring to speculate that never had a war, which, thankfully, was never fought, been so thoroughly prepared over such a long time.

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